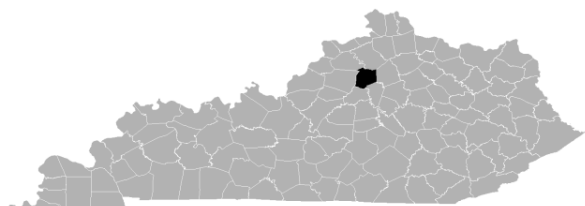


FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2



FRANKLIN COUNTY, KENTUCKY AND INCORPORATED AREAS

| COMMUNITY NAME | COMMUNITY NUMBER |
|---|------------------|
| FRANKFORT, CITY OF | 210075 |
| FRANKLIN COUNTY UNINCORPORATED AREAS | 210280 |

PRELIMINARY

FEB 26 2016



FEMA

REVISED:
Month Day, Year

FLOOD INSURANCE STUDY NUMBER
21073CV001C

Version Number 2.3.3.3

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| Cedar Run | 14P-17P |
| Elkhorn Creek | 18P-25P |

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| Kentucky River | 28P-30tP |
| Kentucky River Tributary 1 | 31P-32P |
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Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT FRANKLIN COUNTY, KENTUCKY

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is

later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Franklin County, Kentucky.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

Table 1: Listing of NFIP Jurisdictions

| Community | CID | HUC-8 Sub-Basin(s) | Located on FIRM Panel(s) | If Not Included, Location of Flood Hazard Data |
|---------------------------------------|--------|--------------------|--|--|
| Frankfort, City of | 210075 | 05100205 | 21073C0108D 21073C0109E 21073C0116D 21073C0117E 21073C0126E 21073C0127D 21073C0128E 21073C0133D 21073C0136E 21073C0137D | |
| Franklin County, Unincorporated Areas | 210280 | 05100205 | 21073C0005D 21073C0007E 21073C0009E 21073C0010D 21073C0015D 21073C0017E 21073C0019E 21073C0020D 21073C0026E | |

Table 1: Listing of NFIP Jurisdictions continued

| Community | CID | HUC-8 Sub- Basin(s) | Located on FIRM Panel(s) | If Not Included, Location of Flood Hazard Data |
|---|--------|---------------------------|--|--|
| Franklin County Unincorporated Areas | 210280 | 05100205 | 21073C0027D 21073C0028E 21073C0029D 21073C0035D 21073C0036E 21073C0037D 21073C0038E 21073C0039D 21073C0041D 21073C0043D 21073C0045D 21073C0055D 21073C0065D 21073C0075D ¹ 21073C0085D 21073C0092D 21073C0094D 21073C0095D ¹ 21073C0100D ¹ 21073C0103D 21073C0104D 21073C0105D 21073C0106D 21073C0107E 21073C0108D 21073C0109E 21073C0111D 21073C0112D 21073C0113D 21073C0114D 21073C0116D 21073C0117E 21073C0118D 21073C0119D 21073C0126E 21073C0127D 21073C0128E 21073C0129D 21073C0131D | |

¹Panel Not Printed

Table 1: Listing of NFIP Jurisdictions continued

| Community | CID | HUC-8 Sub-Basin(s) | Located on FIRM Panel(s) | If Not Included, Location of Flood Hazard Data |
|---|--------|--------------------|--|--|
| Franklin County Unincorporated Areas | 210280 | 05100205 | 21073C0132D 21073C0133D 21073C0134D 21073C0136E 21073C0137D 21073C0138E 21073C0139D 21073C0141D 21073C0145D 21073C0155D 21073C0165D 21073C0175D ¹ 21073C0177D 21073C0180D 21073C0181D 21073C0185D 21073C0200D ¹ 21073C0201E 21073C0205D ¹ 21073C0225D ¹ | |

¹Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, “Map Repositories,” within this FIS Report.

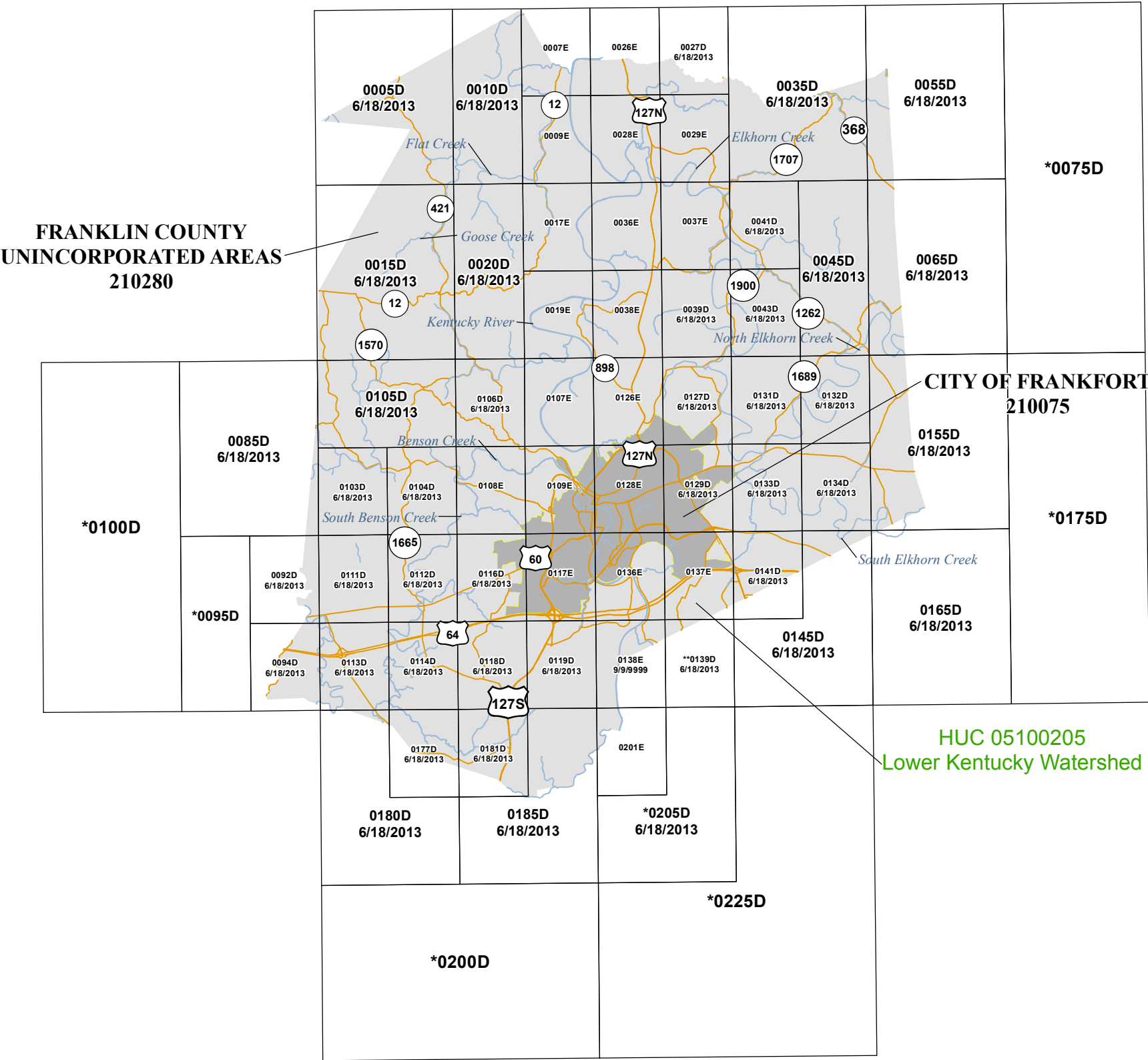
- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Franklin County became effective on September 28, 2007. Refer to Table 28 for information about subsequent revisions to the FIRMs.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Franklin County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and United States Geological Survey (USGS) Hydrologic Unit Code – 8 (HUC-8) codes.

Figure 1: FIRM Panel Index



ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before MONTH DAY, YEAR.

PRELIMINARY
FEB 26 2016

1 inch = 16,667 feet 1:200,000
0 8,300 16,600 33,200 Feet

Map Projection:
Kentucky State Plane Single Zone
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

*PANEL NOT PRINTED - AREA OUTSIDE COUNTY
BOUNDARY

**PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD
AREAS

**MAP SYMBOLOGY
INDEX LAYERS**

- Highway
- Stream Centerline
- FIRM Panel
- Watershed Boundary
- City, Town
- Franklin County

**NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX**

FRANKLIN COUNTY, KENTUCKY and Incorporated Areas
PANELS PRINTED: 0005, 0007, 0009, 0010, 0015, 0017, 0019, 0020, 0026,
0027, 0028, 0029, 0035, 0036, 0037, 0038, 0039, 0041, 0043, 0045, 0055,
0065, 0085, 0092, 0094, 0103, 0104, 0105, 0106, 0107, 0108, 0109, 0111,
0112, 0113, 0114, 0116, 0117, 0118, 0119, 0126, 0127, 0128, 0129, 0131,
0132, 0133, 0134, 0136, 0137, 0138, 0141, 0145, 0155, 0165, 0177, 0180,
0181, 0185, 0201



MAP NUMBER
21073CIND0B
MAP REVISED

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

Figure 2. FIRM Notes to Users

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Lambert Conformal Conic, Kentucky Single Zone. The horizontal datum was North American Datum 1983. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

*NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242*

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided in digital format by the State of Kentucky Division of Geographic Information (KY DGI). Ortho Imagery was originally produced by Photoscience in 2012 and has a 1-meter ground resolution. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Figure 2. FIRM Notes to Users

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Franklin County, Kentucky, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Franklin County, Kentucky, effective Month Day, and Year.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Franklin County.

Figure 3: Map Legend for FIRM

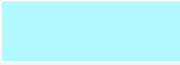
| | |
|--|--|
| <p>SPECIAL FLOOD HAZARD AREAS: <i>The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.</i></p> | |
|  | Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE) |
| Zone A | The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone. |
| Zone AE | The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone. |
| Zone AH | The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone. |
| Zone AO | The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone. |
| Zone AR | The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood. |
| Zone A99 | The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone. |
| Zone V | The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone. |
| Zone VE | Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone. |

Figure 3: Map Legend for FIRM





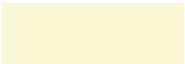








| | |
|--|---|
|  | Regulatory Floodway determined in Zone AE. |
| OTHER AREAS OF FLOOD HAZARD | |
|  | Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile. |
|  | Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone. |
|  | Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information. |
| OTHER AREAS | |
|  | Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible. |
|  | Unshaded Zone X: Areas of minimal flood hazard. |
| FLOOD HAZARD AND OTHER BOUNDARY LINES | |
|   (ortho) (vector) | Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping) |
|  | Limit of Study |
|  | Jurisdiction Boundary |
|  | Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet |
| GENERAL STRUCTURES | |
|  <i>Aqueduct</i> <i>Channel</i> <i>Culvert</i> <i>Storm Sewer</i> | Channel, Culvert, Aqueduct, or Storm Sewer |
|  <i>Dam</i> <i>Jetty</i> <i>Weir</i> | Dam, Jetty, Weir |

Figure 3: Map Legend for FIRM


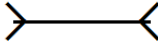

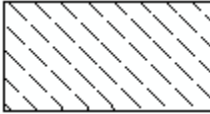

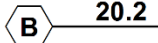
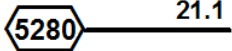
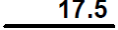
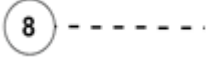













| | |
|---|---|
|  | Levee, Dike, or Floodwall |
|  Bridge | Bridge |
| COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): <i>CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.</i> | |
|  CBRS AREA 09/30/2009 | Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway. |
|  OTHERWISE PROTECTED AREA 09/30/2009 | Otherwise Protected Area |
| REFERENCE MARKERS | |
|  22.0 | River mile Markers |
| CROSS SECTION & TRANSECT INFORMATION | |
|  20.2 | Lettered Cross Section with Regulatory Water Surface Elevation (BFE) |
|  21.1 | Numbered Cross Section with Regulatory Water Surface Elevation (BFE) |
|  17.5 | Unlettered Cross Section with Regulatory Water Surface Elevation (BFE) |
|  8 | Coastal Transect |
|   | <p>Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.</p> <p>Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.</p> |
|  513 | Base Flood Elevation Line |
| ZONE AE (EL 16) | Static Base Flood Elevation value (shown under zone label) |

Figure 3: Map Legend for FIRM

| | |
|---|---|
| ZONE AO (DEPTH 2) | Zone designation with Depth |
| ZONE AO (DEPTH 2) (VEL 15 FPS) | Zone designation with Depth and Velocity |
| BASE MAP FEATURES | |
|  <i>Missouri Creek</i> | River, Stream or Other Hydrographic Feature |
|  | Interstate Highway |
|  | U.S. Highway |
|  | State Highway |
|  | County Highway |
|  MAPLE LANE | Street, Road, Avenue Name, or Private Drive if shown on Flood Profile |
|  RAILROAD | Railroad |
|  | Horizontal Reference Grid Line |
|  | Horizontal Reference Grid Ticks |
|  | Secondary Grid Crosshairs |
| Land Grant | Name of Land Grant |
| 7 | Section Number |
| R. 43 W. T. 22 N. | Range, Township Number |
| ⁴²76^{000m}E | Horizontal Reference Grid Coordinates (UTM) |
| 365000 FT | Horizontal Reference Grid Coordinates (State Plane) |
| 80° 16' 52.5" | Corner Coordinates (Latitude, Longitude) |

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Franklin County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Franklin County, Kentucky, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

| Flooding Source | Community | Downstream Limit | Upstream Limit | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area (mi ²) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis |
|--------------------|---|---|--|--------------------|-------------------------------------|--|----------------|--------------------|------------------|
| All Zone A Streams | Franklin County Incorporated Areas | Various | Various | 051000205 | 125.6 | | N | A | 2011 |
| Benson Creek | Franklin County Incorporated Areas | Confluence with Kentucky River | Approximately 1.3 miles downstream of confluence of Brighton Branch | 05100205 | 3.1 | | Y | AE | 1981 |
| Benson Creek | Franklin County Incorporated Areas, City of Frankfort | Approximately 1.3 miles downstream of confluence of Brighton Branch | Confluence of South Benson Creek | 05100205 | 1.5 | | N | A | 2011 |
| Benson Creek | Franklin County Incorporated Areas | Confluence of South Benson Creek | Approximately 0.4 mile downstream of U.S. Highway 60 | 05100205 | 8.8 | | N | AE | 2011 |
| Benson Creek | Franklin County Incorporated Areas | Approximately 0.4 mile downstream of confluence of U.S. Highway 60 | At 1-64 East Bound | 05100205 | 2.7 | | Y | AE | 1980 |
| Benson Creek | Franklin County Incorporated Areas | At 1-64 East Bound | Anderson County Boundary | 05100205 | 3.6 | | N | A | 2011 |
| Cedar Run | Franklin County Incorporated Areas, City of Frankfort | Confluence with Kentucky River | Approximately 20 feet upstream of Old Lawrenceburg Road/KY Highway 420 | 05100205 | 1.5 | | Y | AE | 1980 |

Table 2: Flooding Sources Included in this FIS Report continued

| Flooding Source | Community | Downstream Limit | Upstream Limit | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area (mi ²) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis |
|----------------------------|---|--|---|--------------------|-------------------------------------|--|----------------|--------------------|------------------|
| Cedar Run | Franklin County Incorporated Areas | Approximately 20 feet upstream of Old Lawrenceburg Road/KY Highway 420 | Approximately 7,660 feet upstream of Old Lawrenceburg Road/KY Highway 420 | 05100205 | 1.5 | | N | AE | 2011 |
| Elkhorn Creek | Franklin County Incorporated Areas | Confluence with Kentucky River | Confluence with North Elkhorn Creek and South Elkhorn Creek | 05100205 | 18.4 | | Y | AE | 1980 |
| Hickman Branch | Franklin County Incorporated Areas | Approximately 3,160 feet downstream of Leestown Pike | Woodford County boundary | 05100205 | 1.8 | | N | AE | 2011 |
| Kentucky River | City of Frankfort, Franklin County Incorporated Areas | Owen and Henry County boundary | Anderson and Woodford County boundary | 05100205 | 27.4 | | Y | AE | 2009 |
| Kentucky River Tributary 1 | City of Frankfort | Confluence with Kentucky River | Approximately 1,195 feet upstream of Cold Harbor Drive | 05100205 | 2.3 | | N | AE | 2011 |
| North Elkhorn Creek | Franklin County Incorporated Areas | Confluence with Elkhorn Creek and South Elkhorn Creek | Approximately 3,130 feet downstream of North Elkhorn Creek Tributary 3 | 05100205 | 3.9 | | Y | AE | 1980 |
| North Elkhorn Creek | Franklin County Incorporated Areas | Approximately 3,130 feet downstream of North Elkhorn Creek Tributary 3 | Scott County boundary | 05100205 | 7.0 | | N | A | 2011 |

Table 2: Flooding Sources Included in this FIS Report continued

| Flooding Source | Community | Downstream Limit | Upstream Limit | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area (mi ²) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis |
|---------------------|------------------------------------|---|---|--------------------|-------------------------------------|--|----------------|--------------------|------------------|
| South Benson Creek | Franklin County Incorporated Areas | Confluence with Benson Creek | Approximately 5,940 feet upstream of confluence of South Benson Creek Tributary 5 | 05100205 | 2.4 | | N | A | 2011 |
| South Benson Creek | Franklin County Incorporated Areas | Approximately 5,940 feet upstream of confluence of South Benson Creek Tributary 5 | Approximately 175 feet upstream of Farmers Lane | 05100205 | 12.9 | | Y | AE | 1980 |
| South Benson Creek | Franklin County Incorporated Areas | Approximately 175 feet upstream of Farmers Lane | Approximately 5,360 feet upstream of U.S. Highway 127 | 05100205 | 2.2 | | N | A | 2011 |
| South Elkhorn Creek | Franklin County Incorporated Areas | Confluence with Elkhorn Creek and North Elkhorn Creek | Approximately 1,313 feet downstream of confluence of Hickman Branch | 05100205 | 2.2 | | Y | AE | 1980 |
| South Elkhorn Creek | Franklin County Incorporated Areas | Approximately 1,313 feet downstream of confluence of Hickman Branch | Woodford County boundary | 05100205 | 8.5 | | N | A | 2011 |
| Vaughn Branch | Franklin County Incorporated Areas | Confluence with Kentucky River | Approximately 520 feet upstream of KY Highway 676 | 05100205 | 2.5 | | N | AE | 2011 |

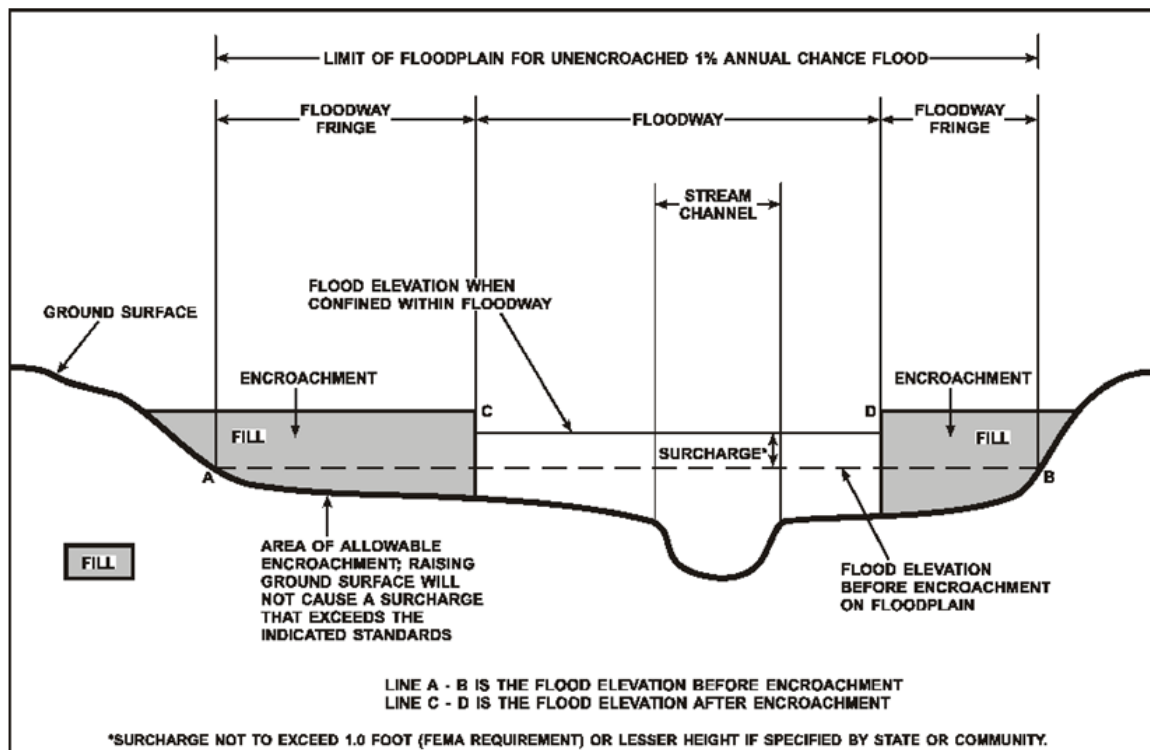
2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations for Kentucky require communities in Franklin County to limit increases caused by encroachment to 1.0 foot and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, “Floodway Data.”

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

Some States and communities use non-encroachment zones to manage floodplain development. For flooding sources with medium flood risk, field surveys are often not collected and surveyed bridge and culvert geometry is not developed. Standard hydrologic and hydraulic analyses are still performed to determine BFEs in these areas. However, floodways are not typically determined, since specific channel profiles are not developed. To assist communities with managing floodplain development in these areas, a “non-encroachment zone” may be provided. While not a FEMA designated floodway, the non-encroachment zone represents that area around the stream that should be reserved to convey the 1% annual chance flood event. As with a floodway, all surcharges must fall within the acceptable range in the non-encroachment zone.

General setbacks can be used in areas of lower risk (e.g. unnumbered Zone A), but these are not considered sufficient where unnumbered Zone A is replaced by Zone AE. The NFIP requires communities to ensure that any development in a non-encroachment area causes no increase in BFEs. Communities must generally prohibit development within the area defined by the non-encroachment width to meet the NFIP requirement. Regulations for Kentucky require communities in Franklin County to limit increases caused by encroachment to 1.0 foot and several communities have adopted additional restrictions for non-encroachment areas.

Non-encroachment areas may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table 25, “Flood Hazard and Non-Encroachment Data for Selected Streams.” Areas for which non-encroachment zones are provided show BFEs and the 1% annual chance floodplain boundaries mapped as zone AE on the FIRM but no floodways.

2.5 Coastal Flood Hazard Areas

This section is not applicable in this FIS project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable in this FIS project.

Figure 5: Wave Runup Transect Schematic

[Not Applicable to this FIS project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable in this FIS project.

2.5.3 Coastal High Hazard Areas

This section is not applicable in this FIS project.

Figure 6: Coastal Transect Schematic

[Not Applicable to this FIS project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable in this FIS project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, “Map Legend for FIRM.” Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Franklin County.

Table 3: Flood Zone Designations by Community

| Community | Flood Zone(s) |
|--------------------------------------|---------------|
| Frankfort, City of | A, AE, X |
| Franklin County Unincorporated Areas | A, AE, X |

3.2 Coastal Barrier Resources System

This section is not applicable in this FIS project.

Table 4: Coastal Barrier Resources System Information

[Not Applicable to this FIS project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

| HUC-8 Sub-Basin Name | HUC-8 Sub-Basin Number | Primary Flooding Source | Description of Affected Area | Drainage Area (square miles) |
|----------------------|------------------------|-------------------------|---|------------------------------|
| Lower Kentucky | 05100205 | Kentucky River | Entire county contained within this watershed | 3,240 |

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Franklin County by flooding source.

Table 6: Principal Flood Problems

| Flooding Source | Description of Flood Problems |
|---|--|
| Kentucky River | <p>The City of Frankfort is subject to severe flooding primarily from the Kentucky River. Frequent flooding has caused property damage in the low-lying areas adjacent to the river. Backwater from the Kentucky River creates further flooding along the lower Benson Creek valley. The plateau areas are susceptible to local surface flooding. Major-scale flooding usually occurs in late winter or spring as a result of rainfall on saturated soils. The areas of Frankfort that are more susceptible to the flooding of the Kentucky River are: on the south shore – along the river to Campbell Street from Paul Sawyer Drive to Ewing Street; on the north shore – along the river to Wapping Street and along Wilkinson Boulevard near Greenbriar Lane and Compton Drive; and on the west shore – along the river to Polsgrove Street and Browner Street from Beson Valley Road to the northern corporate limits. The area on the west shore is also susceptible to the flooding of Benson Creek. Flooding also occurs along Cedar Run. The area around the intersection of Glenns Creek Road and Doss Road near Vaughn Branch is occasionally flooded.</p> |
| Multiple Sources | <p>Franklin County is subject to flooding from Elkhorn Creek, North Elkhorn Creek, South Elkhorn Creek, Kentucky River, Benson Creek, South Benson Creek, and Cedar Run. Frequent flooding has caused property damage in the low-lying areas adjacent to these streams. Flooding usually occurs in the late winter or spring as a result of rainfall on saturated soils. Since 1985, discharge measurements have been estimated for the Kentucky River at a gaging station located on the left bank at the downstream side of the Frankfort Broadway Street Bridge and at Lock & Dam No. 4 (KY Geological Survey 1962). Large flood recorded at the gage were 93,000 cubic feet per second (cfs) in March 1913; 115,000 cfs at a gage height of 47.46 feet in January 1937; and 118,000 cfs at a gage height of 48.47 in December 1978 (KY Geological Survey 1962, U.S. Geological Survey 1979). The December 1978 flood is the maximum flood of record and represents a return period of approximately 250 years, while the March 1913 flood represents a return period of about 15 years. The estimated 1.0 percent annual chance discharge for the Kentucky River at Frankfort is 110,700 cfs at a gage height of 45.8 feet. Since 1915 a gage has been located on the right bank of Elkhorn Creek, 50 feet downstream of the Peaks Mill Road Bridge. The maximum flood of record, 31,000 cfs occurred on August 2, 1932.</p> <p>Low-lying industrial, residential, and commercial structures near Penitentiary Branch, Glenns Creek, and Trumbo Bottom are also subject to flooding from the backwater of the Kentucky River. A few single family residences are farm structures are subject to flooding from Benson Creek, South Benson Creek, and Cedar Run.</p> |
| North Elkhorn Creek, South Elkhorn Creek, and Elkhorn Creek | <p>Several structures of the Old Grand-Dad Distillery, Capital Mobile Home Estates, Elkhorn camping ground, and several single family residences are subject to flooding. Several ponds of the U.S. Fish Cultural Station are inundated by the 0.2 percent annual flood of Elkhorn Creek.</p> |

Table 7 contains information about historic flood elevations in the communities within Franklin County.

Table 7: Historic Flooding Elevations

| Flooding Source | Location | Historic Peak (Feet NAVD88) | Event Date | Approximate Recurrence Interval (years) | Source of Data |
|-----------------|---------------|-----------------------------|------------|---|----------------|
| Kentucky River | Frankfort, KY | 48.47 | 1978 | 250 | USGS gage |
| Kentucky River | Frankfort, KY | 47.46 | 1937 | 200 | USGS gage |
| Kentucky River | Frankfort, KY | 45.8 | 1913 | 15 | USGS gage |

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Franklin County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

| Flooding Source | Structure Name | Type of Measure | Location | Description of Measure |
|------------------|--------------------------------|-----------------|--|---|
| Kentucky River | Lock & Dam No. 4 | Dam | Approximately 0.9 miles downstream of the Broadway Street Bridge | A low-flow navigational dam and has no significant effect on large flows |
| Multiple sources | The South Frankfort Flood wall | Floodwall | Approximately 300 feet west of the intersection of Ewing Street and U.S. Highway 127 to a point approximately 200 feet east of the intersection of Murray Street and East Third Street | Protection from the 1% annual chance flood and built by the U.S. Army Corps of Engineers. |

4.4 Levees

For purposes of the NFIP, FEMA only recognizes levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with comprehensive floodplain management criteria. The Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) describes the information needed for FEMA to determine if a levee system reduces the risk from the 1% annual chance flood. This information must be supplied to FEMA by the community or other party when a flood risk study or restudy is conducted, when FIRMs are revised, or upon FEMA request. FEMA reviews the information for the purpose of establishing the appropriate FIRM flood zone.

Levee systems that are determined to reduce the risk from the 1% annual chance flood are accredited by FEMA. FEMA can also grant provisional accreditation to a levee system that was previously accredited on an effective FIRM and for which FEMA is awaiting data and/or documentation to demonstrate compliance with Section 65.10. These levee systems are referred

to as Provisionally Accredited Levees, or PALs. Provisional accreditation provides communities and levee owners with a specified timeframe to obtain the necessary data to confirm the levee's certification status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Franklin County.

Figure 3 and in Table 9. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system not longer meets Section 65.10, FEMA will de-accredit the levee system and issue an effective FIRM showing the levee-impacted area as a SFHA.

FEMA coordinates its programs with USACE, who may inspect, maintain, and repair levee systems. The USACE has authority under Public Law 84-99 to supplement local efforts to repair flood control projects that are damaged by floods. Like FEMA, the USACE provides a program to allow public sponsors or operators to address levee system maintenance deficiencies. Failure to do so within the required timeframe results in the levee system being placed in an inactive status in the USACE Rehabilitation and Inspection Program. Levee systems in an inactive status are ineligible for rehabilitation assistance under Public Law 84-99.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levees that exist within Franklin County Table 9, "Levees," lists all accredited levees, PALs, and de-accredited levees shown on the FIRM for this FIS Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification systems that were listed in previous FIS Reports. Levees identified as PALs in the table are labeled on the FIRM to indicate their provisional status.

Please note that the information presented in Table 9 is subject to change at any time. For that reason, the latest information regarding any USACE structure presented in the table should be obtained by contacting USACE and accessing the USACE national levee database. For levees owned and/or operated by someone other than the USACE, contact the local community shown in Table 31.

Table 9: Levees

| Community | Flooding Source | Levee Location | Levee Owner | USACE Levee | Levee ID | Covered Under PL84-99 Program? | FIRM Panel(s) |
|--------------------|-----------------|---|--------------------------------------|-------------|------------|--------------------------------|----------------------------|
| Frankfort, City of | Kentucky River | Intersection of Ewing Street and U.S. Highway 127 | U.S. Army Corps of Engineers (USACE) | Yes | 3905110002 | Yes | 21037C0109E |
| Frankfort, City of | Kentucky River | North Bank | U.S. Army Corps of Engineers (USACE) | Yes | 3904110001 | Yes | 21037C0109E 21037C0128E |

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 11. Stream gage information is provided in Table 12.

Table 10: Summary of Discharges

| Flooding Source | Location | Drainage Area (Square Miles) | Peak Discharge (cfs) | | | | |
|-----------------|--|---------------------------------|----------------------|---------------------|---------------------|---------------------------------|--------------------------|
| | | | 10% Annual Chance | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 0.2% Annual Chance |
| Benson Creek | Mouth | 107.0 | 13,838 | * | 20,311 | 23,211 | 30,761 |
| Benson Creek | Frankfort City Limit | 106.0 | 13,754 | * | 20,190 | 23,073 | 30,269 |
| Benson Creek | Approx. 11,362 feet upstream of Kentucky River | 105.4 | 13,695 | * | 20,105 | 22,977 | 30,156 |
| Benson Creek | Near river station 16, 247 feet | 104.4 | 13,606 | * | 19,977 | 22,832 | 29,854 |
| Benson Creek | Just upstream of confluence with South Benson Creek | 72.4 | * | * | * | 14,600 | * |
| Benson Creek | 180 ft D/S of confluence with North Benson Creek | 70.7 | * | * | * | 14,130 | * |
| Benson Creek | Just upstream of confluence with North Benson Creek | 40.8 | * | * | * | 11,260 | * |
| Benson Creek | Just upstream of confluence with Stonelick Creek | 36.7 | * | * | * | 11,090 | * |
| Benson Creek | Near river station 69, 434 ft | 33.3 | 6,300 | * | 9,400 | 10,800 | 14,500 |
| Benson Creek | Upstream of Goose Creek and Ballard Branch | 23.6 | 5,000 | * | 7,500 | 8,600 | 11,200 |
| Benson Creek | East bound lane of Interstate 64 | 21.1 | 4,600 | * | 6,900 | 8,900 | 10,700 |
| Cedar Run | Mouth | 4.9 | 1,700 | * | 2,600 | 3,000 | 4,100 |
| Cedar Run | Approximately 1,500 feet upstream of mouth | 4.2 | 1,500 | * | 2,400 | 2,800 | 3,900 |

*Not calculated for this Flood Risk Project

Table 10: Summary of Discharges continued

| Flooding Source | Location | Drainage Area (Square Miles) | Peak Discharge (cfs) | | | | |
|-----------------|--|---------------------------------|----------------------|---------------------|---------------------|---------------------------------|--------------------------|
| | | | 10% Annual Chance | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 0.2% Annual Chance |
| Cedar Run | West bound lane of Interstate 64 Bridge | 3.5 | 1,400 | * | 2,100 | 2,400 | 3,600 |
| Cedar Run | Near river station 8,105 ft | 2.3 | 1,000 | * | 1,600 | 1,900 | 3,000 |
| Cedar Run | 100 ft U/S/ of Old Lawrenceburg Rd | 2.2 | * | * | * | 1,840 | * |
| Cedar Run | 350 ft U/S of Old Lawrenceburg Rd | 1.8 | * | * | * | 1,430 | * |
| Cedar Run | 3,400 ft U/S of Old Lawrenceburg Rd | 1.7 | * | * | * | 1,250 | * |
| Cedar Run | 3,450 ft U/S of Old Lawrenceburg Rd | 1.1 | * | * | * | 590 | * |
| Cedar Run | 1.23 mi U/S of Old Lawrenceburg Rd | 0.9 | * | * | * | 490 | * |
| Elkhorn Creek | Mouth | 499.0 | 21,464 | * | 28,560 | 31,344 | 37,390 |
| Elkhorn Creek | USGS gage station | 473.0 | 20,947 | * | 27,871 | 30,589 | 36,489 |
| Elkhorn Creek | Forks of the Elkhorn | 436.0 | 20,194 | * | 26,870 | 29,490 | 35,178 |
| Hickman Branch | Just upstream of confluence with South Elkhorn Creek | 4.1 | * | * | * | 1,440 | * |
| Hickman Branch | 3,260 ft downstream of Leestown Rd | 4.1 | * | * | * | 1,430 | * |
| Hickman Branch | 2,600 ft downstream of I-64 Westbound | 3.4 | * | * | * | 1,260 | * |
| Hickman Branch | 2,260 ft downstream of I-64 Westbound | 2.9 | * | * | * | 1,120 | * |

*Not calculated for this Flood Risk Project

Table 10: Summary of Discharges continued

| Flooding Source | Location | Drainage Area (Square Miles) | Peak Discharge (cfs) | | | | |
|-------------------------------|--|---------------------------------|----------------------|---------------------|---------------------|---------------------------------|--------------------------|
| | | | 10% Annual Chance | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 0.2% Annual Chance |
| Hickman Branch | 720 ft upstream of I-64 Eastbound | 2.5 | * | * | * | 1,030 | * |
| Kentucky River | At river mile 80.86 | * | 88,200 | * | 105,200 | 111,800 | 126,000 |
| Kentucky River | At river mile 32 | * | 93,200 | * | 115,100 | 124,400 | 145,000 |
| Kentucky River Tributary 1 | Just upstream of confluence with Kentucky River | 2.4 | * | * | * | 990 | * |
| Kentucky River Tributary 1 | 330 ft upstream of Old Glenns Creek Rd (KY-1784) | 2.2 | * | * | * | 920 | * |
| Kentucky River Tributary 1 | 880 ft downstream of Martin Luther King Jr. Blvd. (KY-1659) | 1.6 | * | * | * | 740 | * |
| South Benson Creek | Downstream Limit of Study | 24.8 | 5,100 | * | 7,700 | 8,900 | 11,900 |
| South Benson Creek | Downstream of U.S. Highways 60 & 460 | 17.5 | 4,100 | * | 6,100 | 7,000 | 9,200 |
| South Benson Creek | Near Intersection of Bridgeport Evergreen Road and South Benson Road | 14.4 | 3,600 | * | 5,400 | 6,200 | 8,300 |
| South Benson Creek | Downstream of South Benson Road | 11.5 | 3,100 | * | 4,600 | 5,300 | 7,100 |
| South Benson Creek | Confluence of South Benson Creek and South Benson Creek Tributary No. 28 | 6.9 | 2,200 | * | 3,300 | 3,800 | 5,100 |
| South Benson Creek | Confluence of South Benson Creek Tributary No. 28 and Tributary from Evergreen Kentucky | 4.0 | 1,500 | * | 2,300 | 2,700 | 3,700 |

*Not calculated for this Flood Risk Project

Table 10: Summary of Discharges continued

| Flooding Source | Location | Drainage Area (Square Miles) | Peak Discharge (cfs) | | | | |
|-----------------|--|---------------------------------|----------------------|---------------------|---------------------|---------------------------------|--------------------------|
| | | | 10% Annual Chance | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 0.2% Annual Chance |
| Vaughn Branch | Just upstream of confluence with Kentucky River | 3.2 | * | * | * | 1,220 | * |
| Vaughn Branch | 4,850 ft upstream of Glenns Creek Rd (KY-1659) | 3.1 | * | * | * | 1,180 | * |
| Vaughn Branch | 4,425 ft U/S of Glenns Creek Rd (KY-1659) | 2.3 | * | * | * | 960 | * |
| Vaughn Branch | 5,125 ft downstream of East- West Connector Rd (KY-676) | 2.2 | * | * | * | 930 | * |
| Vaughn Branch | 3,575 ft downstream of East- West Connector Rd (KY-676) | 1.6 | * | * | * | 740 | * |

*Not calculated for this Flood Risk Project

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to this FIS project]

Table 11: Summary of Non-Coastal Stillwater Elevations

[Not Applicable to this FIS project]

Table 12: Stream Gage Information used to Determine Discharges

| Flooding Source | Gage Identifier | Agency that Maintains Gage | Site Name | Drainage Area (Square Miles) | Period of Record | |
|-----------------|-----------------|----------------------------|--|------------------------------|------------------|---------|
| | | | | | From | To |
| Kentucky River | 03287250 | USGS | Kentucky River at Lock 5 near Tyrone, KY | 5,113 | 06/01/2004 | Present |

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

| Flooding Source | Study Limits | | Hydrologic Model or Method Used | Hydraulic Model or Method Used | Date Analyses Completed | Flood Zone on FIRM | Special Considerations |
|--------------------|---|---|---------------------------------|--------------------------------|-------------------------|--------------------|---|
| | Downstream Limit | Upstream Limit | | | | | |
| All Zone A Streams | Various | Various | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | A | |
| Benson Creek | Confluence with Kentucky River | Approximately 1.3 miles downstream of confluence of Brighton Branch | USGS Regression Equations | HEC-2 | 03/01/1980 | AE | Cross sections for the backwater analysis of Benson Creek near the Frankfort City Limits were obtained from mapping performed for the Frankfort Electric Water Plant Board at a scale of 1:4800 (Frankfort Electric and Water Plant Board 1966) |
| Benson Creek | Approximately 1.3 miles downstream of confluence of Brighton Branch | Confluence of South Benson Creek | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | A | |
| Benson Creek | Confluence of South Benson Creek | Approximately 0.4 mile downstream of U.S. Highway 60 | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | AE | |
| Benson Creek | Approximately 0.4 miles downstream of confluence of Brighton Branch | At 1-64 East Bound | USGS Regression Equations | HEC-2 | 03/01/1980 | AE | |
| Benson Creek | At 1-64 East Bound | Anderson County boundary | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | A | |

Table 13: Summary of Hydrologic and Hydraulic Analyses continued

| Flooding Source | Study Limits | | Hydrologic Model or Method Used | Hydraulic Model or Method Used | Date Analyses Completed | Flood Zone on FIRM | Special Considerations |
|----------------------------|--|---|---------------------------------|--------------------------------|-------------------------|--------------------|------------------------|
| | Downstream Limit | Upstream Limit | | | | | |
| Cedar Run | Confluence with Kentucky River | Approximately 20 feet upstream of Old Lawrenceburg Road/KY Highway 420 | USGS Regression Equations | HEC-2 | 03/01/1980 | AE | |
| Cedar Run | Approximately 20 feet upstream of Old Lawrenceburg Road/KY Highway 420 | Approximately 7,660 feet upstream of Old Lawrenceburg Road/KY Highway 420 | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | AE | |
| Elkhorn Creek | Confluence with Kentucky River | Confluence with North Elkhorn Creek and South Elkhorn Creek | USGS Regression Equations | HEC-2 | 03/01/1980 | AE | |
| Hickman Branch | Approximately 3,160 feet downstream of Leestown Pike | Woodford County boundary | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | AE | |
| Kentucky River | Owen and Henry County boundary | Anderson and Woodford County boundary | Gage Analysis | HEC-RAS 4.1.0 | 2009 | AE | |
| Kentucky River Tributary 1 | Confluence with Kentucky River | Approximately 1,195 feet upstream of Cold Harbor Drive | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | AE | |
| North Elkhorn Creek | Confluence with Elkhorn Creek and South Elkhorn Creek | Approximately 3,130 feet downstream of North Elkhorn Creek Tributary 3 | USGS Regression Equations | HEC-2 | 03/01/1980 | AE | |

Table 13: Summary of Hydrologic and Hydraulic Analyses continued

| Flooding Source | Study Limits | | Hydrologic Model or Method Used | Hydraulic Model or Method Used | Date Analyses Completed | Flood Zone on FIRM | Special Considerations |
|---------------------|---|---|---------------------------------|--------------------------------|-------------------------|--------------------|------------------------|
| | Downstream Limit | Upstream Limit | | | | | |
| North Elkhorn Creek | Approximately 3,130 feet downstream of North Elkhorn Creek Tributary 3 | Scott County boundary | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | A | |
| South Benson Creek | Confluence with Benson Creek | Approximately 5,940 feet upstream of confluence of South Benson Creek Tributary 5 | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | A | |
| South Benson Creek | Approximately 5,940 feet upstream of confluence of South Benson Creek Tributary 5 | Approximately 175 feet upstream of Farmers Lane | USGS Regression Equations | HEC-2 | 03/01/1980 | AE | |
| South Benson Creek | Approximately 175 feet upstream of Farmers Lane | Approximately 5,360 feet upstream of U.S. Highway 127 | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | A | |
| South Elkhorn Creek | Confluence with Elkhorn Creek and North Elkhorn Creek | Approximately 1,313 feet downstream of confluence of Hickman Branch | USGS Regression Equations | HEC-2 | 03/01/1980 | AE | |

Table 13: Summary of Hydrologic and Hydraulic Analyses continued

| Flooding Source | Study Limits | | Hydrologic Model or Method Used | Hydraulic Model or Method Used | Date Analyses Completed | Flood Zone on FIRM | Special Considerations |
|---------------------|---|---|---------------------------------|--------------------------------|-------------------------|--------------------|------------------------|
| | Downstream Limit | Upstream Limit | | | | | |
| South Elkhorn Creek | Approximately 1,313 feet downstream of confluence of Hickman Branch | Woodford County boundary | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | A | |
| Vaughn Branch | Confluence with Kentucky River | Approximately 520 feet upstream of KY Highway 676 | USGS Regression Equations | HEC-RAS 4.1.0 | 04/01/2011 | AE | |

Table 14: Roughness Coefficients

| Flooding Source | Channel “n” | Overbank “n” |
|--------------------------------------|-------------|--------------|
| All Zone A Streams in HUC-8 05100205 | 0.04-0.07 | 0.06-0.17 |
| Benson Creek (1980) | 0.035-0.065 | 0.065-0.098 |
| Benson Creek (2011) | 0.04-0.045 | 0.08-0.15 |
| Cedar Run (AE) | 0.015-0.063 | 0.060-0.100 |
| Cedar Run (A) | 0.045-0.05 | 0.05-0.15 |
| Elkhorn Creek | 0.023-0.095 | 0.040-0.104 |
| Hickman Branch | 0.045 | 0.05-0.10 |
| Kentucky River | 0.035-0.045 | 0.07-0.13 |
| Kentucky River Tributary 1 | 0.03-0.06 | 0.065-0.14 |
| North Elkhorn Creek | 0.039-0.055 | 0.062-0.090 |
| South Benson Creek | 0.030-0.065 | 0.060-0.200 |
| South Elkhorn Creek | 0.040-0.061 | 0.050-0.115 |
| Vaughn Branch | 0.045 | 0.05-0.15 |

5.3 Coastal Analyses

This section is not applicable in this FIS project.

Table 15: Summary of Coastal Analyses

[Not Applicable to this FIS project]

5.3.1 Total Stillwater Elevations

This section is not applicable in this FIS project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not Applicable to this FIS project]

Table 16: Tide Gage Analysis Specifics

[Not Applicable to this FIS project]

5.3.2 Waves

This section is not applicable in this FIS project.

5.3.3 Coastal Erosion

This section is not applicable in this FIS project.

5.3.4 Wave Hazard Analyses

This section is not applicable in this FIS project.

Table 17: Coastal Transect Parameters

[Not Applicable to this FIS project]

Figure 9: Transect Location Map

[Not Applicable to this FIS project]

5.4 Alluvial Fan Analyses

This section is not applicable in this FIS project.

Table 18: Summary of Alluvial Fan Analyses

[Not Applicable to this FIS project]

Table 19: Results of Alluvial Fan Analyses

[Not Applicable to this FIS project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey (NGS) at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not

shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Franklin County are provided in Table 20.

Table 20: Countywide Vertical Datum Conversion

[Not Applicable to this FIS project]

Table 21: Stream-Based Vertical Datum Conversion

[Not Applicable to this FIS project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

| Data Type | Data Provider | Data Date | Data Scale | Data Description |
|----------------------|---|-----------|------------|---|
| Digital Orthophoto | Kentucky Division of Geographic Information | 2012 | N/A | Ortho Imagery was originally produced by the National Agriculture Imagery Program |
| Political boundaries | Kentucky Division of Geographic Information | 2008 | N/A | S_Pol_Ar. Contains county boundary lines and areas associated with the study area |

Table 22: Base Map Sources continued

| Data Type | Data Provider | Data Date | Data Scale | Data Description |
|-------------------------|---|------------|------------|---|
| Raster Imagery | Kentucky Division of Geographic Information | 2012 | 1:200 | S_Base_Index. Contains information about the raster data used as the base map for the study area. |
| Transportation Features | Kentucky Transportation Cabinet | 2013 | N/A | S_Transport_Ln. Contains roads and railroads within the study area |
| Surface Water Features | Federal Emergency Management Agency | 2013 | N/A | S_Wtr_Ln. Stream features |
| Surface Water Features | Kentucky Division of Geographic Information | 07/01/2009 | N/A | S_Wtr_Ln. Kentucky River Stream Features |

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

Table 23: Summary of Topographic Elevation Data used in Mapping

| Community | Flooding Source | Source for Topographic Elevation Data | | | | | |
|-----------------|-------------------------|---------------------------------------|-------|------------------|-------------------|-----------------------|-------------------------|
| | | Description | Scale | Contour Interval | RMSE _z | Accuracy _z | Citation |
| Franklin County | All within HUC 05100205 | LiDAR | 1:200 | 2 ft | | | Photoscience, Inc. 2012 |

Table 23: Summary of Topographic Elevation Data used in Mapping continued

| Community | Flooding Source | Source for Topographic Elevation Data | | | | | |
|--------------------------------------|-------------------------|---------------------------------------|----------|------------------|-------------------|-----------------------|--|
| | | Description | Scale | Contour Interval | RMSE _z | Accuracy _z | Citation |
| Franklin County Unincorporated Areas | All within HUC 05100205 | USGS Quadrangle Maps | 1:24,000 | 10-20 ft. | | | KY Division of Geographic Information 2002 |
| City of Frankfort | All within HUC 05100205 | Topographic maps | N/A | 2-10 ft. | | | City of Frankfort Department of Planning and Building Codes 2002 |

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 24: Floodway Data

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|----------------------------|-----------------------|------------------|-------------------------|---------------------------|---|--------------------|--------------------|----------|
| CROSS SECTION ⁴ | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A | 1,957 | 157 | 2,276 | 8.5 | 508.3 | 480.9 ² | 481.1 ² | 0.2 |
| B | 4,237 | 145 | 2,548 | 9.1 | 508.3 | 483.0 ² | 483.6 ² | 0.6 |
| C | 7,037 | 411 | 3,919 | 5.9 | 508.3 | 487.4 ² | 488.4 ² | 1.0 |
| D | 9,282 | 448 | 4,414 | 5.2 | 508.3 | 492.0 ² | 492.6 ² | 0.6 |
| E | 11,362 | 304 | 2,844 | 8.1 | 508.3 | 498.4 ² | 499.0 ² | 0.6 |
| F | 13,332 | 400 | 3,197 | 7.2 | 508.3 | 507.8 ² | 508.5 ² | 0.7 |
| G | 16,247 | 265 | 3,143 | 7.3 | 517.3 | 517.3 | 518.2 | 0.9 |
| BE | 70,733 | 247 ³ | 2,583 | 4.2 | 712.9 | 712.9 | 713.8 | 0.9 |
| BF | 72,373 | 262 | 2,673 | 3.2 | 714.8 | 714.8 | 715.7 | 0.9 |
| BG | 73,733 | 199 | 1,935 | 4.4 | 716.1 | 716.1 | 716.9 | 0.8 |
| BH | 77,013 | 159 | 1,534 | 5.6 | 722.6 | 722.6 | 723.1 | 0.5 |
| BI | 79,463 | 210 | 1,987 | 4.3 | 726.1 | 726.1 | 726.7 | 0.6 |
| BJ | 81,273 | 279 | 2,780 | 3.1 | 728.1 | 728.1 | 728.9 | 0.8 |
| BK | 83,333 | 194 | 2,069 | 4.2 | 730.0 | 730.0 | 730.8 | 0.8 |

¹ Feet above confluence with Kentucky River

² Water-surface elevations computed without consideration of backwater effects from Kentucky River

³ Width extends beyond the county

⁴ Floodway data for lettered cross-sections are not published in the Floodway Data Table. The floodway data for Limited Detailed Studies are available as an appendix to this FIS and can be found in the Technical Support Data Notebook (TSDN) for this countywide study.

TABLE 24

**FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
AND INCORPORATED AREAS**

FLOODWAY DATA

FLOODING SOURCE: BENSON CREEK

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|--------------------|---------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A | 2,338 | 71 | 287 | 10.5 | 510.8 ² | 501.3 ² | 501.4 | 0.1 |
| B | 2,639 | 65 | 629 | 4.5 | 510.8 ² | 509.3 ² | 509.3 | 0.0 |
| C | 3,819 | 47 | 225 | 12.5 | 522.5 | 522.5 | 522.5 | 0.0 |
| D | 4,953 | 43 | 296 | 8.1 | 543.8 | 543.8 | 543.8 | 0.0 |
| E | 5,525 | 44 | 310 | 7.7 | 554.3 | 554.3 | 554.4 | 0.1 |
| F | 6,670 | 51 | 287 | 8.4 | 579.0 | 579.0 | 579.1 | 0.1 |
| G | 7,900 | 62 | 342 | 5.5 | 608.9 | 608.9 | 609.5 | 0.6 |

¹ Feet above confluence with Kentucky River

² Water-surface elevations computed without consideration of backwater effects from Kentucky River

³ Floodway data for lettered cross-sections H through X are from a Limited Detailed Study and are not published in the Floodway Data Table. The floodway data for Limited Detailed Studies are available as an appendix to this FIS and can be found in the Technical Support Data Notebook (TSDN) for this countywide study.

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CEDAR RUN

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|--------------------|--------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A | 2,175 | 126 | 2,569 | 12.2 | 499.1 | 473.3 ² | 473.3 ² | 0.0 |
| B | 3,343 | 152 | 3,324 | 9.4 | 499.1 | 475.7 ² | 476.3 ² | 0.6 |
| C | 9,625 | 322 | 3,922 | 8.0 | 499.1 | 486.0 ² | 486.4 ² | 0.4 |
| D | 11,032 | 185 | 3,632 | 8.6 | 499.1 | 487.8 ² | 488.4 ² | 0.6 |
| E | 13,961 | 255 | 4,967 | 6.3 | 499.1 | 491.8 ² | 492.4 ² | 0.6 |
| F | 16,815 | 677 | 5,299 | 5.9 | 499.1 | 495.1 ² | 496.0 ² | 0.9 |
| G | 21,725 | 791 | 6,072 | 5.2 | 502.0 | 502.0 | 503.0 | 1.0 |
| H | 24,494 | 534 | 6,941 | 4.5 | 506.7 | 506.7 | 507.5 | 0.8 |
| I | 27,434 | 821 | 4,720 | 6.6 | 511.0 | 511.0 | 511.9 | 0.9 |
| J | 31,594 | 525 | 6,611 | 4.7 | 516.9 | 516.9 | 517.9 | 1.0 |
| K | 35,115 | 1061 | 11,627 | 2.7 | 523.6 | 523.6 | 524.5 | 0.9 |
| L | 38,020 | 876 | 7,707 | 4.1 | 527.9 | 527.9 | 528.7 | 0.8 |
| M | 41,615 | 678 | 6,001 | 5.2 | 535.3 | 535.3 | 536.3 | 1.0 |
| N | 45,910 | 682 | 6,984 | 4.5 | 541.9 | 541.9 | 542.9 | 1.0 |
| O | 50,700 | 1,186 | 10,617 | 3 | 547.4 | 547.4 | 548.3 | 0.9 |
| P | 54,195 | 659 | 6,880 | 4.6 | 554.1 | 544.1 | 544.9 | 0.8 |
| Q | 59,175 | 559 | 5,076 | 6 | 559.8 | 559.8 | 560.5 | 0.7 |
| R | 62,955 | 566 | 6,519 | 4.7 | 570.1 | 570.1 | 571.0 | 0.9 |
| S | 67,039 | 679 | 4,884 | 6.3 | 575.9 | 575.9 | 576.6 | 0.7 |
| T | 70,988 | 202 | 3,266 | 9.4 | 586.9 | 586.9 | 587.9 | 1.0 |
| U | 73,456 | 292 | 3,441 | 8.9 | 596.3 | 596.3 | 597.3 | 1.0 |
| V | 75,495 | 301 | 4,431 | 6.9 | 605.7 | 605.7 | 606.3 | 0.6 |
| W | 78,520 | 294 | 4,155 | 7.4 | 612.9 | 612.9 | 613.8 | 0.9 |
| X | 82,225 | 281 | 4,384 | 7.0 | 623.2 | 623.2 | 623.8 | 0.6 |
| Y | 85,550 | 183 | 3,319 | 9.2 | 630.5 | 630.5 | 631.3 | 0.8 |

¹ Feet above confluence with Kentucky River

² Water-surface elevations computed without consideration of backwater effects from Kentucky River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ELKHORN CREEK

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| Z | 91,498 | 212 | 3,705 | 8.3 | 647.4 | 647.4 | 647.9 | 0.5 |
| AA | 94,385 | 392 | 6,562 | 4.5 | 654.7 | 654.7 | 655.1 | 0.4 |
| AB | 96,665 | 512 | 4,916 | 6.0 | 656.7 | 656.7 | 657.3 | 0.6 |

¹Feet above confluence with Kentucky River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ELKHORN CREEK

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|------------------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A | 254,536 | 1,086/879 ² | 29,017 | 4.1 | 496.9 | 496.9 | 497.7 | 0.8 |
| B | 260,093 | 1,180 | 45,115 | 2.6 | 497.8 | 497.8 | 498.6 | 0.8 |
| C | 264,968 | 991 | 33,148 | 3.6 | 498.2 | 498.2 | 498.9 | 0.7 |
| D | 272,514 | 1,534 | 51,986 | 2.3 | 499.0 | 499.0 | 499.7 | 0.7 |
| E | 278,187 | 1,049 | 27,668 | 4.0 | 499.2 | 499.2 | 500.1 | 0.9 |
| F | 285,408 | 579 | 24,007 | 4.7 | 500.1 | 500.1 | 500.9 | 0.8 |
| G | 293,820 | 848 | 31,841 | 3.5 | 501.5 | 501.5 | 502.2 | 0.7 |
| H | 299,942 | 505 | 24,024 | 4.7 | 502.1 | 502.1 | 502.9 | 0.8 |
| I | 304,401 | 769 | 30,299 | 3.7 | 502.6 | 502.6 | 503.4 | 0.8 |
| J | 314,220 | 758 | 34,044 | 3.3 | 503.6 | 503.6 | 504.4 | 0.8 |
| K | 321,186 | 659 | 23,852 | 4.7 | 504.4 | 504.4 | 505.1 | 0.7 |
| L | 325,503 | 638 | 27,632 | 4.1 | 504.9 | 504.9 | 505.7 | 0.8 |
| M | 330,329 | 780 | 28,031 | 4.0 | 505.5 | 505.5 | 506.2 | 0.7 |
| N | 339,271 | 787 | 30,440 | 3.7 | 506.7 | 506.7 | 507.3 | 0.6 |
| O | 343,401 | 777 | 26,709 | 4.2 | 507.1 | 507.1 | 507.7 | 0.6 |
| P | 347,479 | 774 | 27,592 | 4.1 | 507.8 | 507.8 | 508.4 | 0.6 |
| Q | 351,102 | 514 | 21,284 | 5.3 | 508.5 | 508.5 | 509.1 | 0.6 |
| R | 354,392 | 528 | 22,671 | 4.9 | 509.0 | 509.0 | 509.7 | 0.7 |
| S | 356,103 | 444 | 21,072 | 5.3 | 509.3 | 509.3 | 510.0 | 0.7 |
| T | 359,655 | 434 | 21,707 | 5.2 | 509.9 | 509.9 | 510.5 | 0.6 |

¹ Feet above confluence with Ohio River

² Total floodway width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: KENTUCKY RIVER

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|----------------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| U | 362,455 | 405 | 20,532 | 5.5 | 510.3 | 510.3 | 510.9 | 0.6 |
| V | 363,629 | 440 | 21,650 | 5.2 | 510.5 | 510.5 | 511.1 | 0.6 |
| W | 367,388 | 487 | 23,018 | 4.9 | 511.0 | 511.0 | 511.8 | 0.8 |
| X | 374,909 | 443 | 21,905 | 5.1 | 511.9 | 511.9 | 512.7 | 0.8 |
| Y | 376,824 | 797 | 27,416 | 4.1 | 512.3 | 512.3 | 513.1 | 0.8 |
| Z | 378,813 | 502 | 24,757 | 4.5 | 512.5 | 512.5 | 513.3 | 0.8 |
| AA | 383,538 | 416 | 23,336 | 4.8 | 513.1 | 513.1 | 513.9 | 0.8 |
| AB | 387,926 | 389/179 ² | 21,900 | 5.1 | 513.6 | 513.6 | 514.4 | 0.8 |
| AC | 391,127 | 421/167 ² | 20,348 | 5.5 | 513.9 | 513.9 | 514.7 | 0.8 |

¹ Feet above confluence with Ohio River

² Total floodway width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: KENTUCKY RIVER

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A | 2,580 | 184 | 2,312 | 8.3 | 658.6 | 658.6 | 659.4 | 0.8 |
| B | 4,700 | 189 | 2,489 | 7.7 | 664.5 | 664.5 | 665.2 | 0.7 |
| C | 7,820 | 354 | 3,388 | 5.7 | 671.2 | 671.2 | 672.1 | 0.9 |
| D | 11,900 | 163 | 2,288 | 8.4 | 677.4 | 677.4 | 678.3 | 0.9 |
| E | 15,340 | 175 | 2,502 | 7.7 | 682.5 | 682.5 | 683.2 | 0.7 |
| F | 16,930 | 184 | 2,963 | 6.5 | 684.8 | 684.8 | 685.5 | 0.7 |
| G | 20,380 | 200 | 2,897 | 6.6 | 690.0 | 690.0 | 690.9 | 0.9 |

¹ Feet above confluence with Elkhorn Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
 AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: NORTH ELKHORN CREEK

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A | 0 | 165 | 1,456 | 6.1 | 611.0 | 611.0 | 611.9 | 0.9 |
| B | 2,950 | 283 | 1,608 | 5.5 | 621.1 | 621.1 | 622.0 | 0.9 |
| C | 4,050 | 174 | 1,147 | 7.8 | 627.9 | 627.9 | 628.7 | 0.8 |
| D | 5,280 | 263 | 1,852 | 4.8 | 633.3 | 633.3 | 634.3 | 1.0 |
| E | 6,760 | 278 | 1,961 | 4.5 | 639.5 | 639.5 | 640.5 | 1.0 |
| F | 8,280 | 359 | 2,286 | 3.8 | 645.5 | 645.5 | 646.4 | 0.9 |
| G | 9,810 | 365 | 2,415 | 3.7 | 649.9 | 649.9 | 650.8 | 0.9 |
| H | 11,200 | 218 | 1,623 | 5.5 | 653.7 | 653.7 | 654.7 | 1.0 |
| I | 13,480 | 251 | 1,830 | 4.9 | 660.2 | 660.2 | 661.2 | 1.0 |
| J | 14,220 | 316 | 2,133 | 4.2 | 662.0 | 662.0 | 663.0 | 1.0 |
| K | 15,220 | 263 | 1,456 | 6.1 | 666.3 | 666.3 | 667.1 | 0.8 |
| L | 16,280 | 161 | 1,193 | 7.5 | 672.1 | 672.1 | 672.8 | 0.7 |
| M | 20,030 | 194 | 1,764 | 4.0 | 694.4 | 694.4 | 694.6 | 0.2 |
| N | 21,960 | 150 | 1,215 | 5.8 | 696.6 | 696.6 | 697.1 | 0.5 |
| O | 23,670 | 105 | 1,007 | 7.0 | 700.8 | 700.8 | 701.4 | 0.6 |
| P | 24,760 | 130 | 1,526 | 4.6 | 702.5 | 702.5 | 703.4 | 0.9 |
| Q | 26,090 | 146 | 1,380 | 5.1 | 704.5 | 704.5 | 705.4 | 0.9 |
| R | 28,920 | 149 | 1,601 | 4.4 | 708.6 | 708.6 | 709.2 | 0.6 |
| S | 30,045 | 194 | 2,242 | 3.1 | 709.5 | 709.5 | 710.2 | 0.7 |
| T | 31,090 | 121 | 1,428 | 4.9 | 710.4 | 710.4 | 711.2 | 0.8 |
| U | 33,300 | 124 | 1,554 | 4.5 | 713.1 | 713.1 | 713.8 | 0.7 |
| V | 36,389 | 151 | 1,828 | 3.4 | 716.4 | 716.4 | 717.0 | 0.6 |
| W | 38,029 | 176 | 1,891 | 3.3 | 717.2 | 717.2 | 717.9 | 0.7 |
| X | 41,144 | 147 | 1,489 | 4.2 | 719.8 | 719.8 | 720.7 | 0.9 |
| Y | 45,149 | 379 | 3,140 | 2.0 | 721.7 | 721.7 | 722.6 | 0.9 |
| Z | 47,479 | 294 | 2,157 | 2.9 | 723.7 | 723.7 | 724.6 | 0.9 |

¹ Feet above confluence with Kentucky River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOUTH BENSON CREEK

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| AA | 51,499 | 176 | 1,620 | 3.3 | 729.9 | 729.9 | 730.8 | 0.9 |
| AB | 54,259 | 245 | 1,407 | 2.7 | 732.0 | 732.0 | 732.9 | 0.9 |
| AC | 55,999 | 191 | 908 | 4.2 | 735.4 | 735.4 | 736.3 | 0.9 |
| AD | 57,839 | 282 | 1,341 | 2.8 | 739.2 | 739.2 | 740.2 | 1.0 |
| AE | 59,929 | 97 | 517 | 5.2 | 744.4 | 744.4 | 745.2 | 0.8 |
| AF | 61,339 | 141 | 713 | 3.8 | 748.2 | 748.2 | 749.1 | 0.9 |
| AG | 63,439 | 163 | 827 | 3.3 | 752.8 | 752.8 | 753.7 | 0.9 |
| AH | 67,539 | 141 | 765 | 3.5 | 762.7 | 762.7 | 763.7 | 1.0 |

¹ Feet above the Limit of Detailed Study located 1,810 feet downstream of Pea Ridge Road

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOUTH BENSON CREEK

| LOCATION | | FLOODWAY | | | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|--------------------|--------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A | 416 | 439 | 3,062 | 4.4 | 656.7 | 653.4 ² | 653.7 ² | 0.3 |
| B | 1,970 | 526 | 4,280 | 3.4 | 664.6 | 664.6 | 665.6 | 1.0 |
| C | 3,456 | 311 | 2,827 | 4.7 | 665.5 | 665.5 | 666.5 | 1.0 |
| D | 4,660 | 194 | 2,060 | 6.5 | 668.8 | 668.8 | 669.8 | 1.0 |
| E | 6,255 | 162 | 1,996 | 6.7 | 673.4 | 673.4 | 674.2 | 0.8 |
| F | 8,120 | 357 | 3,093 | 4.3 | 677.6 | 677.6 | 678.6 | 1.0 |
| G | 9,648 | 397 | 2,655 | 5.0 | 681.0 | 681.0 | 681.9 | 0.9 |
| H | 11,692 | 254 | 2,514 | 5.3 | 687.6 | 687.6 | 688.5 | 0.9 |

¹ Feet above confluence with Kentucky River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, KENTUCKY
 AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOUTH ELKHORN CREEK

Non-encroachment areas may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table 25. The non-encroachment width indicates the measured distance left and right (looking downstream) from the mapped center of the stream to the non-encroachment boundary based on a surcharge of 1.0 foot or less.

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|-----------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Benson Creek | H | 24,173 | 14,600 | 539.3 | 68 | 114 |
| Benson Creek | I | 24,244 | 14,600 | 538.7 | 64 | 52 |
| Benson Creek | J | 24,290 | 14,600 | 544.4 | 47 | 59 |
| Benson Creek | 153 | 24,326 | 14,600 | 545.5 | 73 | 40 |
| Benson Creek | 172 | 24,345 | 14,600 | 545.5 | 73 | 40 |
| Benson Creek | 196 | 24,369 | 14,600 | 546.4 | 80 | 46 |
| Benson Creek | 278 | 24,451 | 14,600 | 548.2 | 73 | 30 |
| Benson Creek | K | 24,673 | 14,600 | 552.7 | 98 | 42 |
| Benson Creek | L | 24,983 | 14,600 | 554.5 | 258 | 122 |
| Benson Creek | 1000 | 25,173 | 14,600 | 554.8 | 335 | 185 |
| Benson Creek | 1500 | 25,673 | 14,600 | 555.3 | 101 | 414 |
| Benson Creek | 1630 | 25,803 | 14,600 | 555.4 | 91 | 438 |
| Benson Creek | 1787 | 25,960 | 14,600 | 555.6 | 94 | 402 |
| Benson Creek | 1838 | 26,011 | 14,600 | 555.8 | 87 | 421 |
| Benson Creek | 1919 | 26,092 | 14,600 | 555.9 | 73 | 241 |
| Benson Creek | M | 26,173 | 14,600 | 555.9 | 35 | 459 |
| Benson Creek | 2134 | 26,307 | 14,600 | 557.2 | 38 | 492 |
| Benson Creek | 2264 | 26,437 | 14,600 | 558.5 | 39 | 487 |
| Benson Creek | 2377 | 26,550 | 14,600 | 559.5 | 35 | 486 |
| Benson Creek | 2436 | 26,609 | 14,600 | 559.8 | 39 | 487 |
| Benson Creek | 2500 | 26,673 | 14,600 | 560.5 | 57 | 431 |
| Benson Creek | N | 26,788 | 14,600 | 561.6 | 57 | 398 |
| Benson Creek | 2737 | 26,910 | 14,600 | 561.8 | 55 | 326 |
| Benson Creek | 2825 | 26,998 | 14,600 | 561.8 | 74 | 215 |
| Benson Creek | O | 27,063 | 14,600 | 561.7 | 51 | 189 |
| Benson Creek | 2938 | 27,111 | 14,600 | 562.1 | 54 | 174 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|-----------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Benson Creek | 3000 | 27,173 | 14,600 | 562.3 | 57 | 166 |
| Benson Creek | 3089 | 27,262 | 14,600 | 562.6 | 60 | 123 |
| Benson Creek | 3142 | 27,315 | 14,600 | 562.7 | 63 | 104 |
| Benson Creek | P | 27,380 | 14,600 | 563.3 | 60 | 88 |
| Benson Creek | 3283 | 27,456 | 14,600 | 564.3 | 49 | 43 |
| Benson Creek | 3344 | 27,517 | 14,600 | 565.7 | 47 | 45 |
| Benson Creek | 3450 | 27,623 | 14,600 | 567.6 | 62 | 78 |
| Benson Creek | 3500 | 27,673 | 14,600 | 568.0 | 54 | 55 |
| Benson Creek | 3632 | 27,805 | 14,600 | 570.1 | 50 | 65 |
| Benson Creek | Q | 27,892 | 14,600 | 571.8 | 61 | 104 |
| Benson Creek | 3804 | 27,977 | 14,600 | 572.2 | 56 | 116 |
| Benson Creek | R | 28,050 | 14,600 | 573.2 | 73 | 155 |
| Benson Creek | 3950 | 28,123 | 14,600 | 573.5 | 67 | 158 |
| Benson Creek | 4000 | 28,173 | 14,600 | 573.6 | 66 | 148 |
| Benson Creek | 4127 | 28,300 | 14,600 | 573.7 | 84 | 155 |
| Benson Creek | S | 28,352 | 14,600 | 573.9 | 67 | 173 |
| Benson Creek | 4246 | 28,419 | 14,600 | 574.1 | 75 | 175 |
| Benson Creek | 4312 | 28,485 | 14,600 | 574.2 | 60 | 171 |
| Benson Creek | 4368 | 28,541 | 14,600 | 574.4 | 95 | 223 |
| Benson Creek | 4397 | 28,570 | 14,600 | 574.6 | 107 | 153 |
| Benson Creek | 4407 | 28,580 | 14,600 | 574.6 | 156 | 200 |
| Benson Creek | 4427 | 28,600 | 14,600 | 574.6 | 155 | 158 |
| Benson Creek | 4500 | 28,673 | 14,600 | 574.7 | 156 | 114 |
| Benson Creek | 4560 | 28,733 | 14,600 | 574.7 | 213 | 95 |
| Benson Creek | 4599 | 28,772 | 14,600 | 574.8 | 237 | 77 |
| Benson Creek | 5000 | 29,173 | 14,600 | 575.2 | 107 | 159 |
| Benson Creek | T | 29,682 | 14,600 | 575.5 | 345 | 55 |
| Benson Creek | 6000 | 30,173 | 14,600 | 576.4 | 348 | 44 |
| Benson Creek | 6500 | 30,673 | 14,600 | 577.6 | 115 | 280 |
| Benson Creek | 7001 | 31,174 | 14,600 | 578.2 | 62 | 482 |
| Benson Creek | 7500 | 31,673 | 14,600 | 579.3 | 137 | 430 |
| Benson Creek | 8000 | 32,173 | 14,600 | 580.4 | 345 | 245 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|-----------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Benson Creek | 8500 | 32,673 | 14,600 | 581.8 | 367 | 83 |
| Benson Creek | U | 33,173 | 14,600 | 582.9 | 278 | 207 |
| Benson Creek | 9071 | 33,244 | 14,600 | 583.2 | 252 | 278 |
| Benson Creek | 9110 | 33,283 | 14,600 | 583.3 | 236 | 299 |
| Benson Creek | 9167 | 33,340 | 14,600 | 584.0 | 201 | 329 |
| Benson Creek | 9213 | 33,386 | 14,600 | 584.2 | 125 | 348 |
| Benson Creek | V | 33,444 | 14,600 | 584.6 | 107 | 359 |
| Benson Creek | W | 33,902 | 14,600 | 586.4 | 69 | 67 |
| Benson Creek | X | 33,961 | 14,600 | 589.6 | 81 | 81 |
| Benson Creek | 10080 | 34,253 | 14,600 | 590.4 | 130 | 278 |
| Benson Creek | 10121 | 34,294 | 14,600 | 590.4 | 223 | 341 |
| Benson Creek | Y | 34,673 | 14,600 | 590.5 | 348 | 162 |
| Benson Creek | 11000 | 35,173 | 14,130 | 591.4 | 386 | 83 |
| Benson Creek | 11341 | 35,514 | 11,260 | 592.2 | 405 | 32 |
| Benson Creek | Z | 35,947 | 11,260 | 593.5 | 442 | 34 |
| Benson Creek | 12205 | 36,378 | 11,260 | 595.1 | 309 | 136 |
| Benson Creek | 12712 | 36,885 | 11,260 | 597.6 | 143 | 292 |
| Benson Creek | AA | 37,454 | 11,260 | 600.2 | 273 | 87 |
| Benson Creek | AB | 37,943 | 11,260 | 601.5 | 165 | 185 |
| Benson Creek | 14305 | 38,478 | 11,260 | 603.7 | 279 | 111 |
| Benson Creek | 14370 | 38,543 | 11,260 | 603.7 | 269 | 131 |
| Benson Creek | 14464 | 38,637 | 11,260 | 604.0 | 257 | 155 |
| Benson Creek | 14577 | 38,750 | 11,260 | 604.8 | 216 | 209 |
| Benson Creek | 14657 | 38,830 | 11,260 | 605.1 | 188 | 232 |
| Benson Creek | 14731 | 38,904 | 11,260 | 605.3 | 181 | 245 |
| Benson Creek | 14816 | 38,989 | 11,260 | 605.5 | 177 | 248 |
| Benson Creek | AC | 39,497 | 11,260 | 607.6 | 105 | 380 |
| Benson Creek | 15840 | 40,013 | 11,260 | 610.3 | 35 | 320 |
| Benson Creek | AD | 40,452 | 11,260 | 613.2 | 30 | 341 |
| Benson Creek | 16759 | 40,932 | 11,260 | 615.1 | 42 | 398 |
| Benson Creek | 17308 | 41,481 | 11,260 | 616.9 | 59 | 421 |
| Benson Creek | AE | 41,678 | 11,260 | 617.6 | 98 | 332 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|-----------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Benson Creek | AF | 42,307 | 11,260 | 620.7 | 170 | 190 |
| Benson Creek | 18344 | 42,517 | 11,260 | 622.0 | 159 | 166 |
| Benson Creek | AG | 43,047 | 11,260 | 625.7 | 295 | 34 |
| Benson Creek | AH | 43,547 | 11,260 | 628.2 | 324 | 66 |
| Benson Creek | AI | 44,091 | 11,260 | 629.5 | 101 | 290 |
| Benson Creek | AJ | 44,560 | 11,260 | 631.8 | 129 | 232 |
| Benson Creek | 20881 | 45,054 | 11,260 | 633.0 | 169 | 171 |
| Benson Creek | AK | 45,532 | 11,260 | 634.6 | 241 | 79 |
| Benson Creek | 21866 | 46,039 | 11,260 | 637.3 | 233 | 82 |
| Benson Creek | 22334 | 46,507 | 11,260 | 639.0 | 43 | 157 |
| Benson Creek | 22908 | 47,081 | 11,260 | 642.0 | 131 | 160 |
| Benson Creek | 23333 | 47,506 | 11,260 | 643.9 | 233 | 92 |
| Benson Creek | AL | 48,044 | 11,260 | 646.4 | 176 | 87 |
| Benson Creek | AM | 48,578 | 11,090 | 650.4 | 184 | 117 |
| Benson Creek | 24916 | 49,089 | 11,090 | 652.3 | 39 | 278 |
| Benson Creek | 24973 | 49,146 | 11,090 | 652.9 | 34 | 345 |
| Benson Creek | 25080 | 49,253 | 11,090 | 653.4 | 82 | 299 |
| Benson Creek | AN | 49,381 | 11,090 | 653.9 | 85 | 343 |
| Benson Creek | 25300 | 49,473 | 11,090 | 654.9 | 106 | 324 |
| Benson Creek | AO | 49,599 | 11,090 | 656.1 | 96 | 344 |
| Benson Creek | 25537 | 49,710 | 11,090 | 656.3 | 125 | 265 |
| Benson Creek | 25614 | 49,787 | 11,090 | 656.6 | 141 | 284 |
| Benson Creek | AP | 49,899 | 11,090 | 656.8 | 222 | 238 |
| Benson Creek | 25930 | 50,103 | 11,090 | 658.3 | 290 | 102 |
| Benson Creek | AQ | 50,629 | 11,090 | 662.5 | 455 | 30 |
| Benson Creek | 26911 | 51,084 | 11,090 | 664.6 | 293 | 144 |
| Benson Creek | AR | 51,641 | 11,090 | 667.8 | 139 | 241 |
| Benson Creek | AS | 52,168 | 11,090 | 672.1 | 131 | 262 |
| Benson Creek | 28482 | 52,655 | 11,090 | 675.0 | 314 | 32 |
| Benson Creek | AT | 52,994 | 11,090 | 676.9 | 258 | 40 |
| Benson Creek | 28885 | 53,058 | 11,090 | 677.0 | 231 | 40 |
| Benson Creek | AU | 53,506 | 11,090 | 678.9 | 51 | 50 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|-----------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Benson Creek | AV | 53,551 | 11,090 | 681.7 | 448 | 62 |
| Benson Creek | AW | 53,709 | 11,090 | 682.6 | 204 | 206 |
| Benson Creek | 29713 | 53,886 | 11,090 | 682.6 | 67 | 193 |
| Benson Creek | AX | 54,657 | 11,090 | 683.0 | 54 | 136 |
| Benson Creek | AY | 55,162 | 11,090 | 684.2 | 54 | 136 |
| Benson Creek | AZ | 55,665 | 11,090 | 686.6 | 50 | 55 |
| Benson Creek | BA | 56,150 | 11,090 | 690.8 | 30 | 165 |
| Benson Creek | 32469 | 56,642 | 11,090 | 692.5 | 102 | 67 |
| Benson Creek | 33005 | 57,178 | 11,090 | 694.1 | 95 | 49 |
| Benson Creek | 33616 | 57,789 | 11,090 | 696.7 | 107 | 30 |
| Benson Creek | BB | 58,234 | 11,090 | 698.8 | 161 | 58 |
| Benson Creek | 34468 | 58,641 | 11,090 | 699.7 | 89 | 92 |
| Benson Creek | 34902 | 59,075 | 11,090 | 700.7 | 205 | 70 |
| Benson Creek | 35370 | 59,543 | 11,090 | 701.2 | 55 | 173 |
| Benson Creek | 35869 | 60,042 | 11,090 | 702.6 | 95 | 93 |
| Benson Creek | 36370 | 60,543 | 11,090 | 703.3 | 147 | 36 |
| Benson Creek | 36857 | 61,030 | 11,090 | 703.5 | 90 | 57 |
| Benson Creek | 37360 | 61,533 | 11,090 | 704.8 | 90 | 34 |
| Benson Creek | 37885 | 62,058 | 11,090 | 705.8 | 57 | 97 |
| Benson Creek | 38373 | 62,546 | 11,090 | 706.5 | 38 | 98 |
| Benson Creek | 38852 | 63,025 | 11,090 | 707.8 | 40 | 102 |
| Benson Creek | 39362 | 63,535 | 11,090 | 708.4 | 106 | 70 |
| Benson Creek | 39877 | 64,050 | 11,090 | 709.0 | 55 | 110 |
| Benson Creek | 40370 | 64,543 | 11,090 | 709.8 | 102 | 52 |
| Benson Creek | 40868 | 65,041 | 11,090 | 710.8 | 70 | 84 |
| Benson Creek | 41352 | 65,525 | 11,090 | 710.8 | 64 | 56 |
| Benson Creek | 41830 | 66,003 | 11,090 | 710.8 | 120 | 50 |
| Benson Creek | 42311 | 66,484 | 11,090 | 710.9 | 198 | 77 |
| Benson Creek | 42812 | 66,985 | 11,090 | 710.9 | 51 | 75 |
| Benson Creek | 43290 | 67,463 | 11,090 | 711.0 | 45 | 123 |
| Benson Creek | 43779 | 67,952 | 11,090 | 711.0 | 63 | 89 |
| Benson Creek | 44292 | 68,465 | 11,090 | 711.0 | 30 | 151 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|-----------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Benson Creek | BC | 68,979 | 11,090 | 711.1 | 138 | 82 |
| Benson Creek | BD | 69,434 | 11,090 | 711.1 | 205 | 42 |
| Cedar Run | 343 | 8,105 | 1,900 | 615.0 | 20 | 18 |
| Cedar Run | 362 | 8,467 | 1,840 | 616.3 | 35 | 27 |
| Cedar Run | 381 | 8,486 | 1,840 | 616.3 | 40 | 27 |
| Cedar Run | 466 | 8,571 | 1,840 | 616.4 | 38 | 23 |
| Cedar Run | 615 | 8,720 | 1,430 | 618.8 | 23 | 25 |
| Cedar Run | 849 | 8,954 | 1,430 | 623.9 | 17 | 17 |
| Cedar Run | 943 | 9,048 | 1,430 | 625.4 | 20 | 12 |
| Cedar Run | 1127 | 9,232 | 1,430 | 630.7 | 7 | 15 |
| Cedar Run | 1303 | 9,408 | 1,430 | 635.6 | 39 | 13 |
| Cedar Run | 1369 | 9,474 | 1,430 | 637.0 | 46 | 7 |
| Cedar Run | 1552 | 9,657 | 1,430 | 642.8 | 12 | 24 |
| Cedar Run | 1709 | 9,814 | 1,430 | 645.7 | 29 | 11 |
| Cedar Run | 2152 | 10,257 | 1,430 | 652.5 | 12 | 15 |
| Cedar Run | 1632 | 10,737 | 1,430 | 659.7 | 18 | 19 |
| Cedar Run | 2772 | 10,877 | 1,430 | 664.0 | 15 | 14 |
| Cedar Run | 2835 | 10,940 | 1,430 | 666.3 | 8 | 19 |
| Cedar Run | 3188 | 11,293 | 1,430 | 673.0 | 10 | 19 |
| Cedar Run | 3669 | 11,774 | 1,430 | 682.3 | 12 | 23 |
| Cedar Run | 3938 | 12,043 | 1,250 | 687.0 | 11 | 17 |
| Cedar Run | 4169 | 12,274 | 1,250 | 689.3 | 13 | 16 |
| Cedar Run | 4658 | 12,763 | 590 | 695.8 | 7 | 27 |
| Cedar Run | 4732 | 12,837 | 590 | 697.1 | 7 | 21 |
| Cedar Run | 4876 | 12,981 | 590 | 689.6 | 7 | 19 |
| Cedar Run | 5073 | 13,178 | 590 | 703.2 | 7 | 13 |
| Cedar Run | 5164 | 13,269 | 590 | 705.2 | 7 | 13 |
| Cedar Run | 5289 | 13,394 | 590 | 707.5 | 7 | 14 |
| Cedar Run | 5507 | 13,612 | 590 | 710.9 | 7 | 13 |
| Cedar Run | 5669 | 13,774 | 590 | 713.5 | 7 | 7 |
| Cedar Run | 5820 | 13,925 | 590 | 715.6 | 7 | 14 |
| Cedar Run | 5951 | 14,056 | 590 | 717.9 | 7 | 16 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|----------------------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Cedar Run | 6087 | 14,192 | 590 | 720.0 | 7 | 19 |
| Cedar Run | 6221 | 14,326 | 590 | 721.8 | 21 | 40 |
| Cedar Run | 6674 | 14,779 | 590 | 724.1 | 20 | 15 |
| Cedar Run | 7213 | 15,318 | 590 | 728.1 | 7 | 58 |
| Cedar Run | 7808 | 15,913 | 490 | 731.0 | 22 | 7 |
| Hickman Branch | 999 | 999 | 1,440 | 693.4 | 26 | 12 |
| Hickman Branch | 1517 | 1,517 | 1,430 | 698.2 | 33 | 11 |
| Hickman Branch | 2036 | 2,036 | 1,430 | 703.7 | 18 | 27 |
| Hickman Branch | B | 2,576 | 1,430 | 708.7 | 20 | 15 |
| Hickman Branch | 3180 | 3,180 | 1,430 | 712.7 | 66 | 11 |
| Hickman Branch | C | 3,668 | 1,430 | 715.7 | 11 | 20 |
| Hickman Branch | 4325 | 4,325 | 1,430 | 722.4 | 31 | 13 |
| Hickman Branch | D | 4,354 | 1,430 | 722.4 | 20 | 14 |
| Hickman Branch | E | 4,546 | 1,430 | 728.6 | 27 | 14 |
| Hickman Branch | 4588 | 4,588 | 1,430 | 728.8 | 53 | 11 |
| Hickman Branch | F | 4,679 | 1,430 | 728.9 | 40 | 25 |
| Hickman Branch | G | 7,072 | 1,260 | 752.3 | 92 | 45 |
| Hickman Branch | 7547 | 7,547 | 1,120 | 752.3 | 31 | 53 |
| Hickman Branch | 8017 | 8,017 | 1,120 | 752.3 | 51 | 32 |
| Hickman Branch | H | 8,524 | 1,120 | 752.3 | 42 | 11 |
| Hickman Branch | I | 9,045 | 1,120 | 752.3 | 20 | 12 |
| Hickman Branch | 9275 | 9,275 | 1,120 | 752.3 | 20 | 20 |
| Hickman Branch | J | 9,312 | 1,120 | 752.3 | 23 | 24 |
| Hickman Branch | K | 9,798 | 1,120 | 758.3 | 18 | 18 |
| Hickman Branch | 9925 | 9,925 | 1,120 | 758.7 | 24 | 118 |
| Hickman Branch | 10054 | 10,054 | 1,120 | 758.8 | 11 | 118 |
| Hickman Branch | L | 10,539 | 1,030 | 759.2 | 42 | 61 |
| Kentucky River Tributary 1 | A | 1,790 | 990 | 510.3 | 14 | 20 |
| Kentucky River Tributary 1 | 1895 | 1,895 | 990 | 510.3 | 13 | 38 |
| Kentucky River Tributary 1 | 2056 | 2,056 | 990 | 510.3 | 13 | 32 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|----------------------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Kentucky River Tributary 1 | 2222 | 2,222 | 990 | 510.3 | 13 | 28 |
| Kentucky River Tributary 1 | 2382 | 2,382 | 990 | 510.3 | 11 | 13 |
| Kentucky River Tributary 1 | 2508 | 2,508 | 990 | 510.3 | 15 | 12 |
| Kentucky River Tributary 1 | B | 2,726 | 990 | 510.3 | 12 | 33 |
| Kentucky River Tributary 1 | C | 2,778 | 990 | 510.3 | 8 | 54 |
| Kentucky River Tributary 1 | D | 2,858 | 990 | 510.3 | 12 | 40 |
| Kentucky River Tributary 1 | 2886 | 2,886 | 990 | 510.3 | 14 | 46 |
| Kentucky River Tributary 1 | 2919 | 2,919 | 990 | 510.3 | 8 | 30 |
| Kentucky River Tributary 1 | E | 3,028 | 990 | 510.3 | 6 | 6 |
| Kentucky River Tributary 1 | F | 3,075 | 990 | 510.3 | 18 | 18 |
| Kentucky River Tributary 1 | G | 3,106 | 990 | 510.3 | 28 | 32 |
| Kentucky River Tributary 1 | H | 3,226 | 990 | 510.3 | 20 | 16 |
| Kentucky River Tributary 1 | 3310 | 3,310 | 990 | 510.3 | 17 | 14 |
| Kentucky River Tributary 1 | I | 3,371 | 920 | 510.3 | 12 | 9 |
| Kentucky River Tributary 1 | J | 3,797 | 920 | 510.9 | 22 | 13 |
| Kentucky River Tributary 1 | 3950 | 3,950 | 920 | 513.9 | 11 | 10 |
| Kentucky River Tributary 1 | K | 4,157 | 920 | 518.4 | 16 | 11 |
| Kentucky River Tributary 1 | L | 4,317 | 920 | 520.9 | 16 | 20 |
| Kentucky River Tributary 1 | M | 4,329 | 920 | 521.7 | 17 | 20 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|----------------------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Kentucky River Tributary 1 | N | 4,382 | 920 | 526.0 | 8 | 8 |
| Kentucky River Tributary 1 | O | 4,561 | 920 | 534.4 | 13 | 13 |
| Kentucky River Tributary 1 | 4630 | 4,630 | 920 | 534.7 | 41 | 21 |
| Kentucky River Tributary 1 | 4669 | 4,669 | 920 | 534.7 | 33 | 22 |
| Kentucky River Tributary 1 | 4713 | 4,713 | 920 | 534.7 | 28 | 20 |
| Kentucky River Tributary 1 | 4776 | 4,776 | 920 | 534.7 | 23 | 16 |
| Kentucky River Tributary 1 | 4820 | 4,820 | 920 | 534.7 | 18 | 15 |
| Kentucky River Tributary 1 | P | 4,879 | 920 | 534.7 | 32 | 14 |
| Kentucky River Tributary 1 | Q | 5,435 | 920 | 541.1 | 30 | 8 |
| Kentucky River Tributary 1 | 5590 | 5,590 | 920 | 544.5 | 35 | 8 |
| Kentucky River Tributary 1 | 5776 | 5,776 | 920 | 547.7 | 28 | 8 |
| Kentucky River Tributary 1 | R | 5,884 | 920 | 550.2 | 21 | 8 |
| Kentucky River Tributary 1 | 6435 | 6,435 | 920 | 559.1 | 8 | 29 |
| Kentucky River Tributary 1 | 6615 | 6,615 | 920 | 562.2 | 8 | 38 |
| Kentucky River Tributary 1 | 6787 | 6,787 | 920 | 565.4 | 8 | 41 |
| Kentucky River Tributary 1 | 6907 | 6,907 | 920 | 567.4 | 25 | 16 |
| Kentucky River Tributary 1 | 7058 | 7,058 | 920 | 569.9 | 32 | 8 |
| Kentucky River Tributary 1 | S | 7,273 | 740 | 573.9 | 19 | 8 |
| Kentucky River Tributary 1 | T | 7,434 | 740 | 577.6 | 19 | 8 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|----------------------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Kentucky River Tributary 1 | U | 7,636 | 740 | 581.0 | 8 | 17 |
| Kentucky River Tributary 1 | V | 7,783 | 740 | 584.5 | 8 | 22 |
| Kentucky River Tributary 1 | W | 7,838 | 740 | 587.0 | 10 | 14 |
| Kentucky River Tributary 1 | X | 7,907 | 740 | 591.9 | 13 | 13 |
| Kentucky River Tributary 1 | Y | 8,279 | 740 | 604.6 | 13 | 13 |
| Kentucky River Tributary 1 | 8338 | 8,338 | 740 | 604.6 | 10 | 40 |
| Kentucky River Tributary 1 | 8531 | 8,531 | 740 | 604.8 | 11 | 45 |
| Kentucky River Tributary 1 | Z | 8,652 | 740 | 604.7 | 20 | 15 |
| Kentucky River Tributary 1 | 8821 | 8,821 | 740 | 605.6 | 19 | 14 |
| Kentucky River Tributary 1 | AA | 8,936 | 740 | 606.3 | 14 | 11 |
| Kentucky River Tributary 1 | 9529 | 9,529 | 740 | 610.7 | 37 | 13 |
| Kentucky River Tributary 1 | AB | 9,647 | 740 | 611.2 | 13 | 21 |
| Kentucky River Tributary 1 | AC | 9,780 | 740 | 613.4 | 27 | 8 |
| Kentucky River Tributary 1 | 9936 | 9,936 | 740 | 615.4 | 19 | 14 |
| Kentucky River Tributary 1 | 10065 | 10,065 | 740 | 616.7 | 14 | 27 |
| Kentucky River Tributary 1 | AD | 10,174 | 740 | 617.8 | 15 | 10 |
| Kentucky River Tributary 1 | AE | 10,254 | 740 | 619.5 | 8 | 12 |
| Kentucky River Tributary 1 | AF | 10,343 | 740 | 621.3 | 10 | 12 |
| Kentucky River Tributary 1 | 10375 | 10,375 | 740 | 621.5 | 9 | 10 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|----------------------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Kentucky River Tributary 1 | AG | 10,599 | 740 | 622.6 | 14 | 23 |
| Kentucky River Tributary 1 | AH | 10,711 | 740 | 624.0 | 10 | 29 |
| Kentucky River Tributary 1 | AI | 10,817 | 740 | 625.7 | 11 | 26 |
| Kentucky River Tributary 1 | AJ | 10,899 | 740 | 630.8 | 8 | 8 |
| Kentucky River Tributary 1 | AK | 10,983 | 740 | 636.4 | 65 | 70 |
| Kentucky River Tributary 1 | 11068 | 11,068 | 740 | 636.8 | 45 | 45 |
| Kentucky River Tributary 1 | 11166 | 11,166 | 740 | 636.8 | 60 | 19 |
| Kentucky River Tributary 1 | 11331 | 11,331 | 740 | 636.9 | 75 | 30 |
| Kentucky River Tributary 1 | AL | 11,389 | 740 | 636.9 | 52 | 33 |
| Kentucky River Tributary 1 | 11448 | 11,448 | 740 | 637.0 | 33 | 40 |
| Kentucky River Tributary 1 | 11491 | 11,491 | 740 | 637.2 | 33 | 53 |
| Kentucky River Tributary 1 | AM | 11,539 | 740 | 637.3 | 24 | 50 |
| Kentucky River Tributary 1 | AN | 11,632 | 740 | 638.4 | 14 | 10 |
| Kentucky River Tributary 1 | 11769 | 11,769 | 740 | 641.5 | 13 | 14 |
| Kentucky River Tributary 1 | 11888 | 11,888 | 740 | 643.9 | 12 | 13 |
| Kentucky River Tributary 1 | AO | 12,024 | 740 | 646.3 | 10 | 14 |
| Kentucky River Tributary 1 | AP | 12,138 | 740 | 647.7 | 9 | 30 |
| Vaughn Branch | A | 235 | 1,220 | 511.8 | 19 | 18 |
| Vaughn Branch | B | 285 | 1,220 | 511.8 | 11 | 11 |
| Vaughn Branch | C | 409 | 1,220 | 511.8 | 16 | 16 |
| Vaughn Branch | 431 | 431 | 1,220 | 511.8 | 21 | 28 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|-----------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Vaughn Branch | 996 | 996 | 1,220 | 511.8 | 23 | 15 |
| Vaughn Branch | 1291 | 1,291 | 1,220 | 511.8 | 25 | 10 |
| Vaughn Branch | 1700 | 1,700 | 1,220 | 511.8 | 32 | 9 |
| Vaughn Branch | 2341 | 2,341 | 1,220 | 511.8 | 31 | 29 |
| Vaughn Branch | D | 2,666 | 1,220 | 511.8 | 93 | 20 |
| Vaughn Branch | 3192 | 3,192 | 1,220 | 511.8 | 40 | 140 |
| Vaughn Branch | 3543 | 3,543 | 1,220 | 511.8 | 25 | 145 |
| Vaughn Branch | E | 4,076 | 1,220 | 511.8 | 55 | 34 |
| Vaughn Branch | 4484 | 4,484 | 1,220 | 511.8 | 80 | 25 |
| Vaughn Branch | 4869 | 4,869 | 1,220 | 511.8 | 220 | 9 |
| Vaughn Branch | 5402 | 5,402 | 1,220 | 511.8 | 190 | 40 |
| Vaughn Branch | 5597 | 5,597 | 1,180 | 511.8 | 200 | 21 |
| Vaughn Branch | F | 6,026 | 960 | 511.8 | 196 | 9 |
| Vaughn Branch | 6502 | 6,502 | 960 | 511.8 | 150 | 9 |
| Vaughn Branch | 7090 | 7,090 | 960 | 511.8 | 60 | 12 |
| Vaughn Branch | G | 7,194 | 960 | 511.8 | 17 | 18 |
| Vaughn Branch | H | 7,379 | 930 | 511.8 | 70 | 9 |
| Vaughn Branch | 7495 | 7,495 | 930 | 511.8 | 74 | 36 |
| Vaughn Branch | I | 7,608 | 930 | 511.8 | 40 | 30 |
| Vaughn Branch | J | 8,119 | 930 | 511.8 | 15 | 19 |
| Vaughn Branch | 8622 | 8,622 | 930 | 511.8 | 9 | 19 |
| Vaughn Branch | K | 9,164 | 740 | 513.1 | 36 | 30 |
| Vaughn Branch | L | 9,636 | 740 | 520.6 | 9 | 9 |
| Vaughn Branch | M | 10,149 | 740 | 530.6 | 9 | 13 |
| Vaughn Branch | N | 10,633 | 740 | 542.2 | 9 | 10 |
| Vaughn Branch | O | 11,148 | 740 | 553.2 | 11 | 9 |
| Vaughn Branch | P | 11,674 | 740 | 566.2 | 9 | 9 |
| Vaughn Branch | 12404 | 12,404 | 740 | 603.4 | 15 | 14 |
| Vaughn Branch | Q | 12,430 | 740 | 604.9 | 22 | 22 |
| Vaughn Branch | R | 12,955 | 740 | 609.9 | 22 | 22 |
| Vaughn Branch | 12970 | 12,970 | 740 | 610.0 | 18 | 18 |
| Vaughn Branch | S | 13,108 | 740 | 610.8 | 9 | 10 |

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams continued

| Flooding Source | Cross Section | Stream Station ¹ | 1% Annual Chance Flood Discharge (cfs) | 1% Annual Chance Water Surface Elevation (feet NAVD88) | Non-Encroachment Width (feet) | |
|-----------------|---------------|-----------------------------|--|--|-------------------------------|-------|
| | | | | | Left | Right |
| Vaughn Branch | T | 13,210 | 740 | 616.4 | 10 | 9 |

¹ Feet above mouth

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this FIS project.

Table 26: Summary of Coastal Transect Mapping Considerations

[Not Applicable to this FIS project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, “Map Repositories”).

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit www.fema.gov/floodplain-management/letter-map-amendment-loma and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/floodplain-management/letter-map-amendment-loma for the “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill” or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the “Flood Map-Related Fees” section.

A tutorial for LOMR-F is available at www.fema.gov/online-tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions and download the form “MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision”. Visit the “Flood Map-Related Fees” section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Franklin County FIRM are listed in Table 27.

Table 27: Incorporated Letters of Map Change
[Not Applicable to this FIS Project]

6.5.4 Physical Map Revisions

Physical Map Revisions (PMRs) are an official republication of a community’s NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community’s chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the “Flood

Map Revision Processes” section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Franklin County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, “Community Map History.” A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.
- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or “pending” (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.
- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the

PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Franklin County FIRMs in countywide format was 09/28/2007.

Table 28: Community Map History

| Community Name | Initial Identification Date | Initial FHBM Effective Date | FHBM Revision Date(s) | Initial FIRM Effective Date | FIRM Revision Date(s) |
|--------------------------------------|-----------------------------|-----------------------------|-----------------------|-----------------------------|---------------------------------|
| Frankfort, City of | 06/07/1974 | 06/07/1974 | 08/20/1976 | 07/02/1981 | TBD 06/18/2013 09/28/2007 |
| Franklin County Unincorporated Areas | 06/17/1977 | 06/17/1977 | None | 09/30/1981 | TBD 06/18/2013 09/28/2007 |

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

| Flooding Source | FIS Report Dated | Contractor | Number | Work Completed Date | Affected Communities |
|------------------|------------------|-------------------------|------------------|---------------------|--------------------------------------|
| Kentucky River | TBD | AECOM | TBD | June 2015 | Franklin County Unincorporated Areas |
| Multiple Sources | 06/18/2013 | URS Corporation | EMA_2009-CA-5931 | April 2011 | Franklin County Incorporated Areas |
| Multiple Sources | 09/28/2007 | Watershed IV Alliance | EMA-2002-CO-008A | December 2005 | Franklin County Incorporated Areas |
| Multiple Sources | 01/21/1981 | Booker Associated, Inc. | H-4640 | September 1979 | City of Frankfort |

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

| Community | FIS Report Dated | Date of Meeting | Meeting Type | Attended By |
|---|------------------|-----------------|--------------------|--|
| Franklin County Unincorporated Areas | TBD | 09/12/2012 | Discovery Meeting | FEMA, Kentucky Division of Water, Stantec, and the affected communities |
| | | TBD | CCO Meeting | |
| | | TBD | Resilience Meeting | |
| | 06/18/2013 | 10/28/2008 | Initial CCO | FEMA, representatives of the communities, and the study contractor |
| | | 12/14/2011 | Final CCO | FEMA, representatives of Franklin County, Kentucky Division of Water, and URS Corp. |
| | 09/28/2007 | 07/21/2004 | Initial CCO | Representatives of the impacted communities |
| | | 03/22/2006 | Final CCO | FEMA, the USACE, the State of Kentucky, Franklin County, and the City of Frankfort, and the study contractor |
| | 01/21/1981 | 03/21/1978 | Initial CCO | FEMA, affected communities, and the study contractor |
| | | 08/01/1980 | Final CCO | FEMA, affected communities, and the study contractor |
| | | | | |
| City of Frankfort | TBD | 09/12/2012 | Discovery Meeting | FEMA, Kentucky Division of Water, Stantec, and the affected communities |
| | | TBD | CCO Meeting | |
| | | TBD | Resilience Meeting | |
| | 06/18/2013 | 10/28/2008 | Initial CCO | FEMA, representatives of the communities, and the study contractor |
| | | 12/14/2011 | Final CCO | FEMA, representatives of Franklin County, Kentucky Division of Water, and URS Corp. |

Table 30: Community Meetings continued

| Community | FIS Report Dated | Date of Meeting | Meeting Type | Attended By |
|-------------------|------------------|-----------------|--------------|--|
| City of Frankfort | 09/28/2007 | 07/21/2004 | Initial CCO | Representatives of the impacted communities |
| | | 03/22/2006 | Final CCO | FEMA, the USACE, the State of Kentucky, Franklin County, and the City of Frankfort, and the study contractor |
| | 01/21/1981 | 03/21/1978 | Initial CCO | FEMA, affected communities, and the study contractor |
| | | 11/24/1980 | Final CCO | FEMA, affected communities, and the study contractor |

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

Table 31 is a list of the locations where FIRMs for Franklin County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

| Community | Address | City | State | Zip Code |
|---------------------------------------|--|-----------|-------|----------|
| Frankfort, City of | Planning and Building Codes Department 315 West Second Street | Frankfort | KY | 40601 |
| Franklin County, Unincorporated Areas | Franklin County Fiscal Court 321 West Main Street | Frankfort | KY | 40601 |

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 32: Additional Information

| FEMA and the NFIP | |
|---|--|
| FEMA and FEMA Engineering Library website | www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library |
| NFIP website | www.fema.gov/national-flood-insurance-program |
| NFHL Dataset | msc.fema.gov |
| FEMA Region IV | Federal Emergency Management Agency, 3003 Chamblee Tucker Road, Atlanta, GA 30341 (770) – 220 - 5200 |

Table 32: Additional Information continued

| Other Federal Agencies | |
|--------------------------------------|---|
| USGS website | www.usgs.gov |
| Hydraulic Engineering Center website | www.hec.usace.army.mil |
| State Agencies and Organizations | |
| State NFIP Coordinator | Alex J. VanPelt KY Division of Water 200 Fair Oaks Lane Frankfort, KY 40601 502-564-3410 4952 alex.vanpelt@ky.gov |
| State GIS Coordinator | Kent Anness Statewide GIS Coordinator 100 Fair Oaks Frankfort, KY 40601 Phone: 502-564-6268 kent.anness@ky.gov |
| Statewide Regulatory Coordinator | Carey Johnson Statewide Regulatory Coordinator 200 Fair Oaks Lane, Fourth Floor Frankfort, KY 40601 Phone: 502-564-3410 carey.johnson@ky.gov |

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

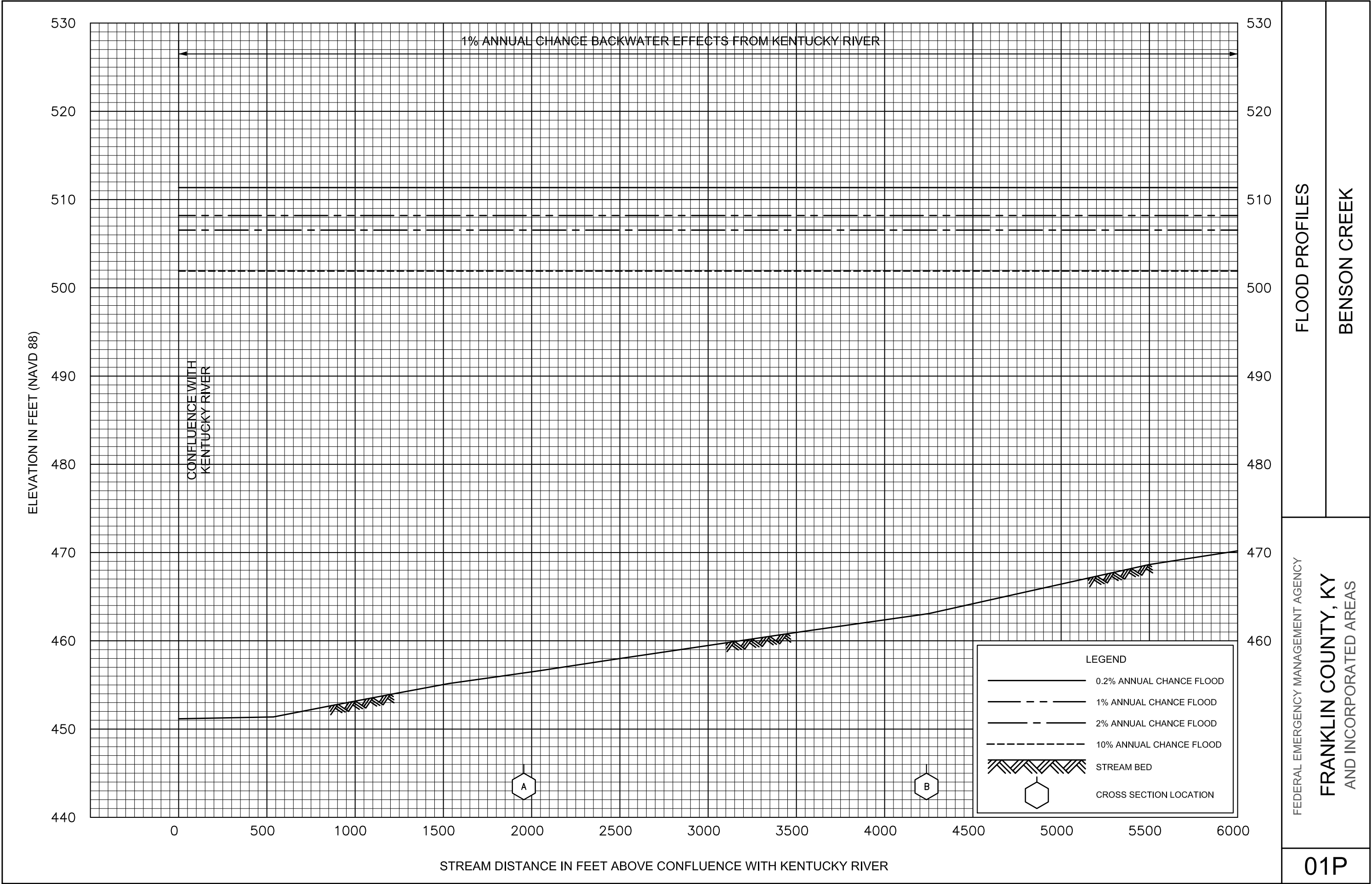
Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

| Citation in this FIS | Publisher/ Issuer | Publication Title, "Article," Volume, Number, etc. | Author/Editor | Place of Publication | Publication Date/ Date of Issuance | Link |
|--|---|--|---------------------------------|----------------------|------------------------------------|------|
| Frankfort Electric & Water Plant Board 1966 | Haworth & Associates | | Clark Aerial Survey Corporation | Frankfort, KY | January 1966 | |
| Hodgkins and Martin 2003 | US Geological Survey | <i>Estimating the Magnitude of Peak Flows for Streams in Kentucky for Selected Recurrence Intervals. Water Resources Investigations Report 03-4180</i> | G.A. Hodgkins and G.R. Martin | | 2003 | |
| Hydrologic Engineering Center 2010 | U.S Army Corps of Engineers | HEC-RAS, River Analysis System User's Manual, Version 4.1 | | Davis, CA | 2010 | |
| Kentucky Division of Geographic Information 2002 | Kentucky Division of Geographic Information | | | Frankfort, KY | 2002 | |
| KY Geological Survey 1962 | Kentucky Geological Survey | <i>Floods in Kentucky – Magnitude and Frequency</i> | | Lexington, KY | July 1962 | |
| PhotoScience, 2012 | Photo Science, Inc. | <i>Light Detection and Ranging Data (LiDAR)</i> | Photo Science, Inc. | Lexington, KY | 2012 | |
| USACE 1974 | U.S. Army Corps of Engineers, Louisville District | <i>Floodplain Information, Kentucky River, Vicinity of Frankfort, Kentucky</i> | | Louisville, KY | June 1974 | |

Table 33: Bibliography and References continued

| Citation in this FIS | Publisher/ Issuer | Publication Title, "Article," Volume, Number, etc. | Author/Editor | Place of Publication | Publication Date/ Date of Issuance | Link |
|--|-------------------------------------|---|-----------------------------------|----------------------|------------------------------------|------|
| USACE 1976 | U.S. Army Corps of Engineers | HEC-2 Water Surface Elevation Profiles | | Davis, CA | November 1976 | |
| USACE 2010 | U.S. Army Corps of Engineers | HEC-RAS River Analysis 4.1.0 | | Davis, CA | January 2010 | |
| U.S. Geological Survey 1976 | U.S. Geological Survey | <i>Technique for Estimating Magnitude and Frequency of Floods in Kentucky</i> | | | November 1976 | |
| U.S. Geological Survey 1979 | U.S. Geological Survey | <i>Floods of December 1978 in Kentucky</i> | | Lexington, KY | April 1979 | |
| U.S. Interagency Advisory Committee 1982 | U.S. Interagency Advisory Committee | <i>Guidelines for determining flood flow frequency, Bulletin 17-B of the Hydrology Subcommittee</i> | Office of Water Data Coordination | Reston, VA | 1982 | |
| U.S. Water Resources Council 1976 | U.S. Water Resources Council | <i>Guidelines for Determining Flood Flow Frequency, Bulletin No. 17</i> | | | March 1976 | |



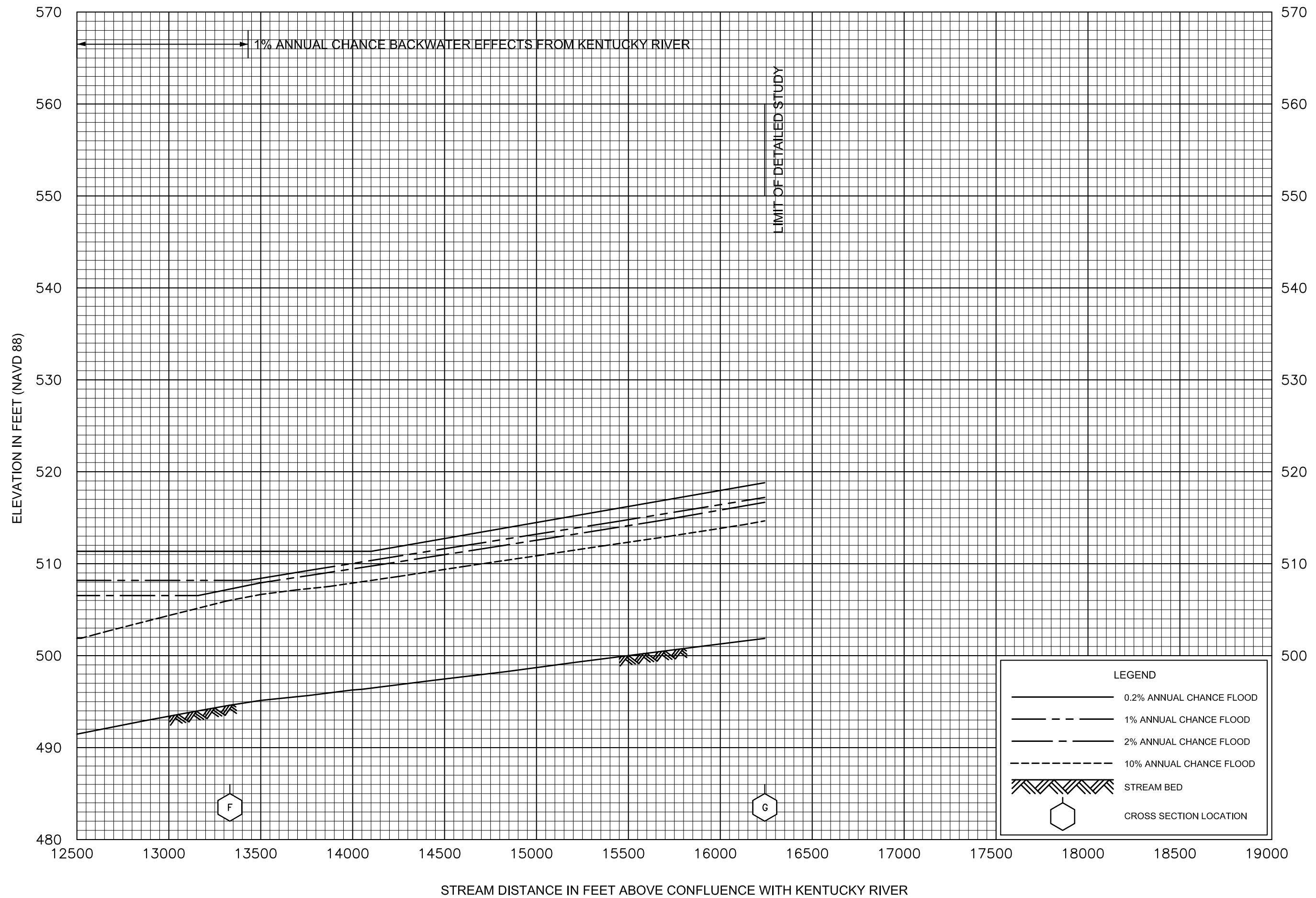
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FRANKLIN COUNTY, KY
AND INCORPORATED AREAS

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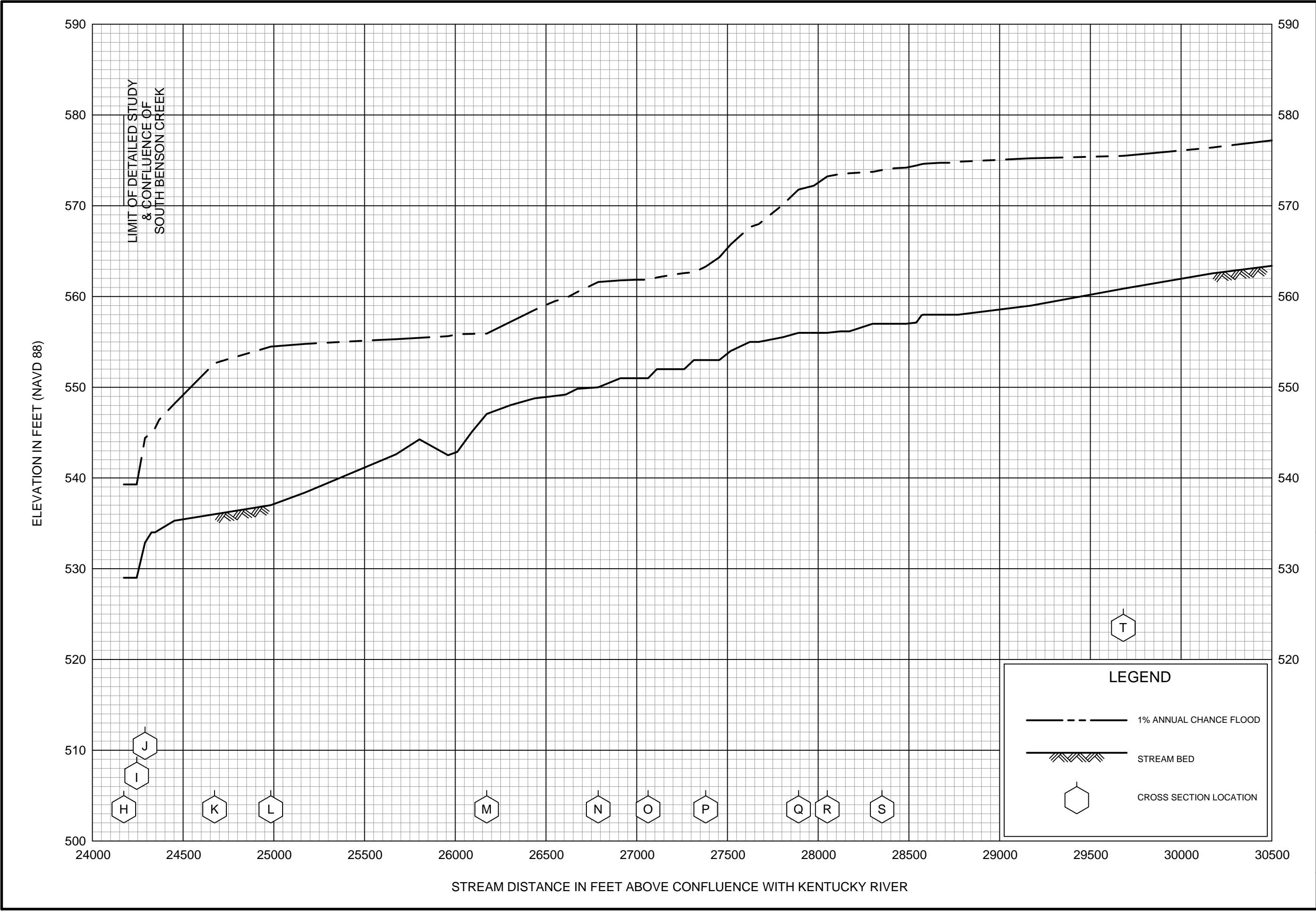
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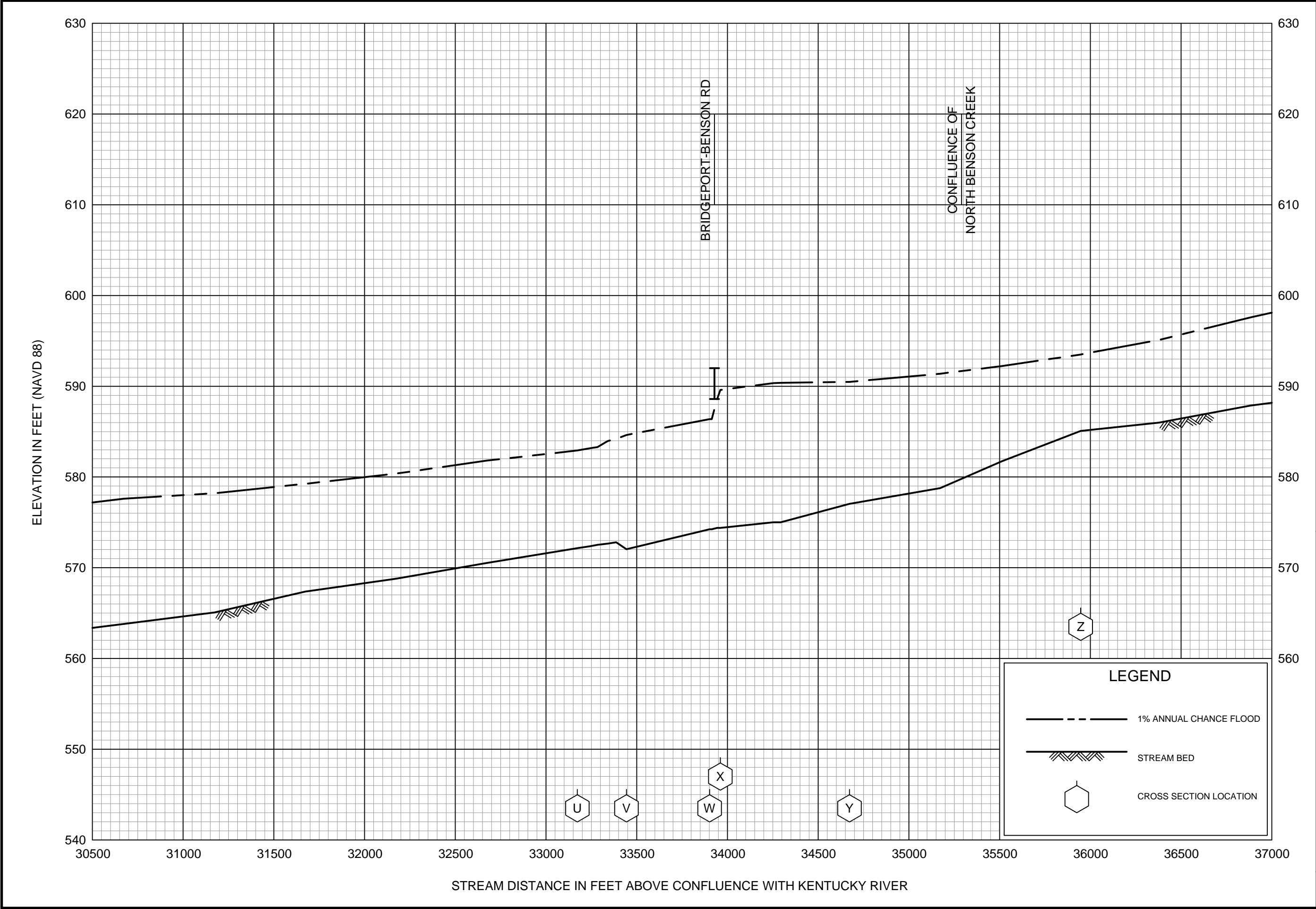
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AND INCORPORATED AREAS



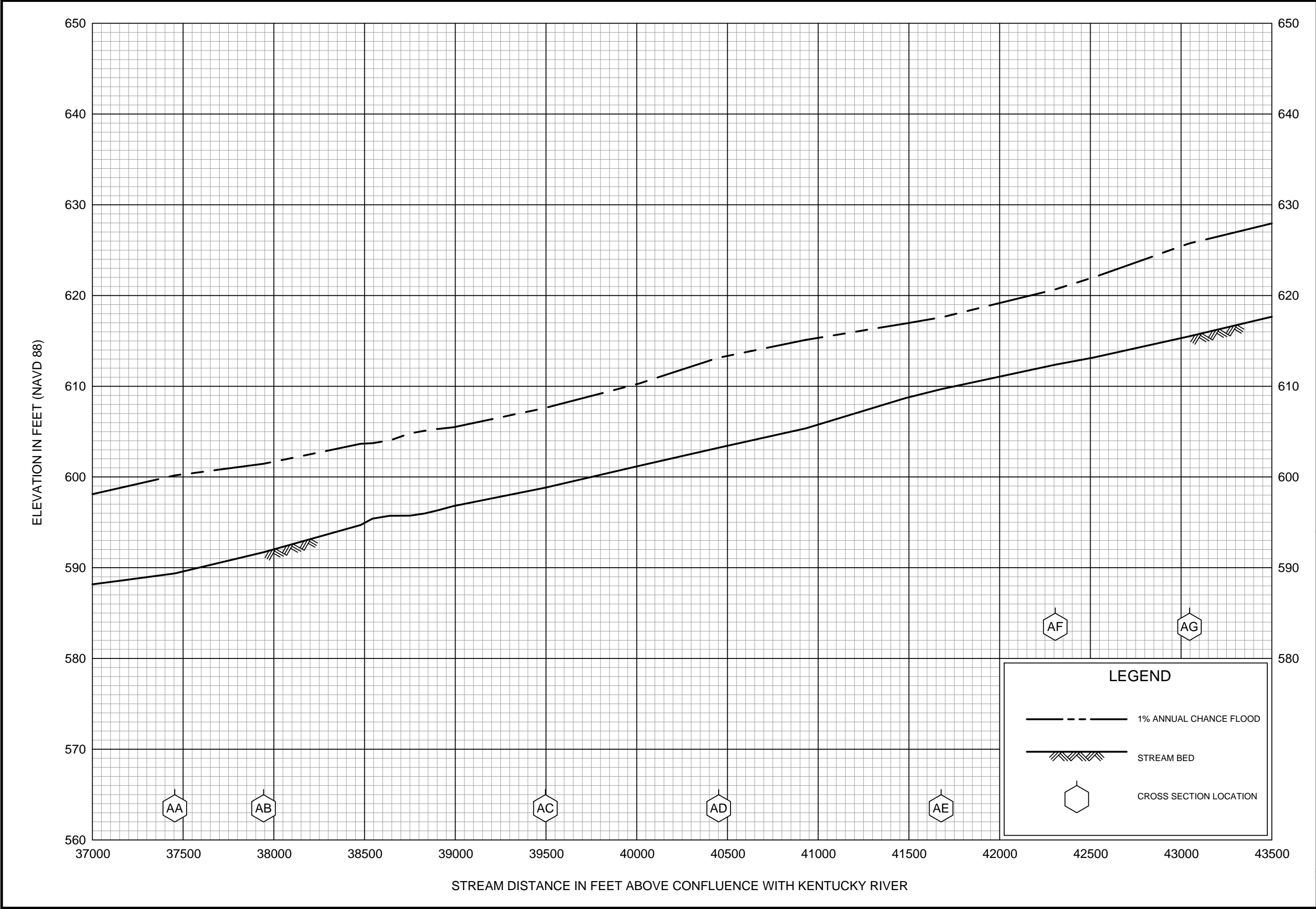
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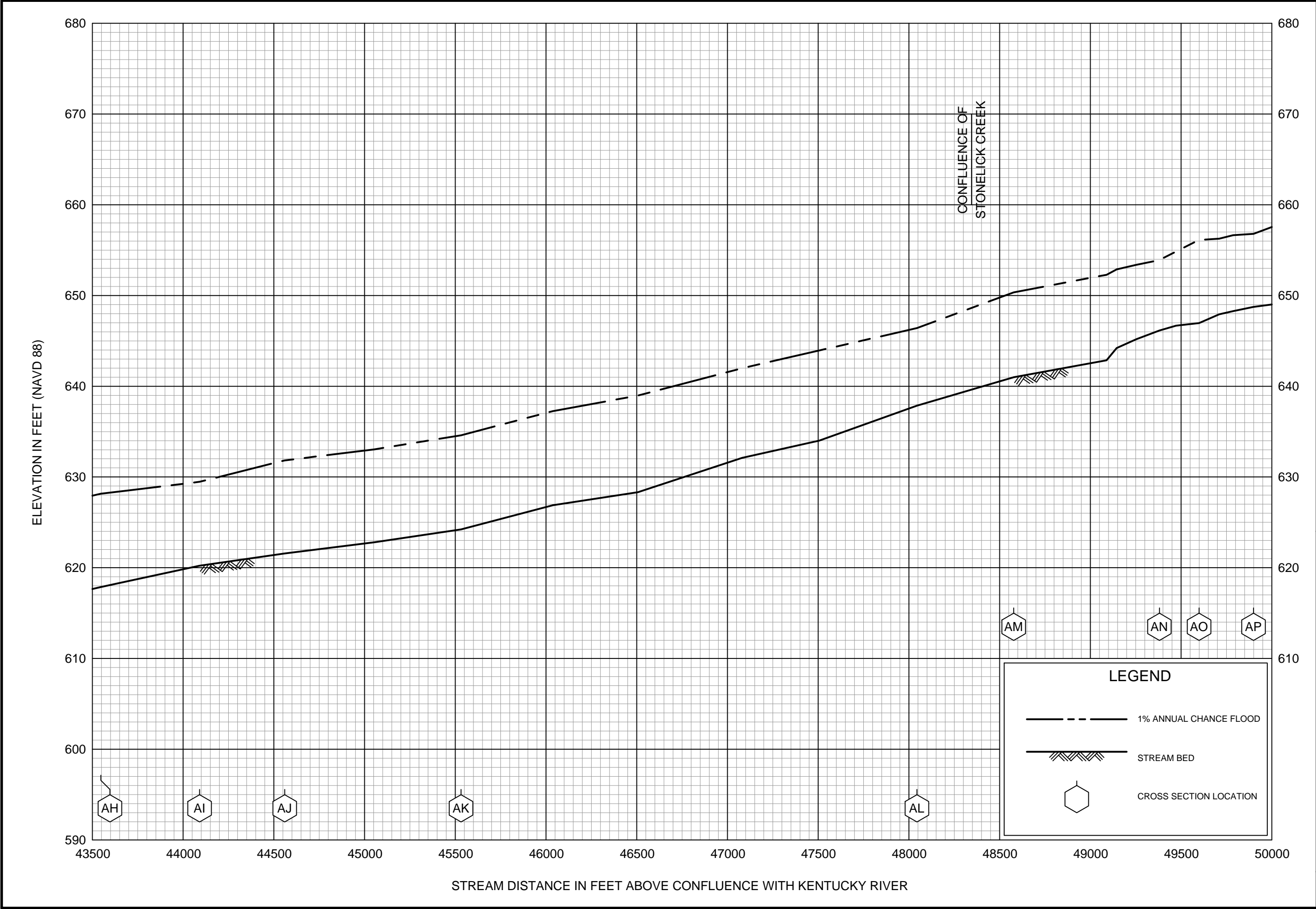
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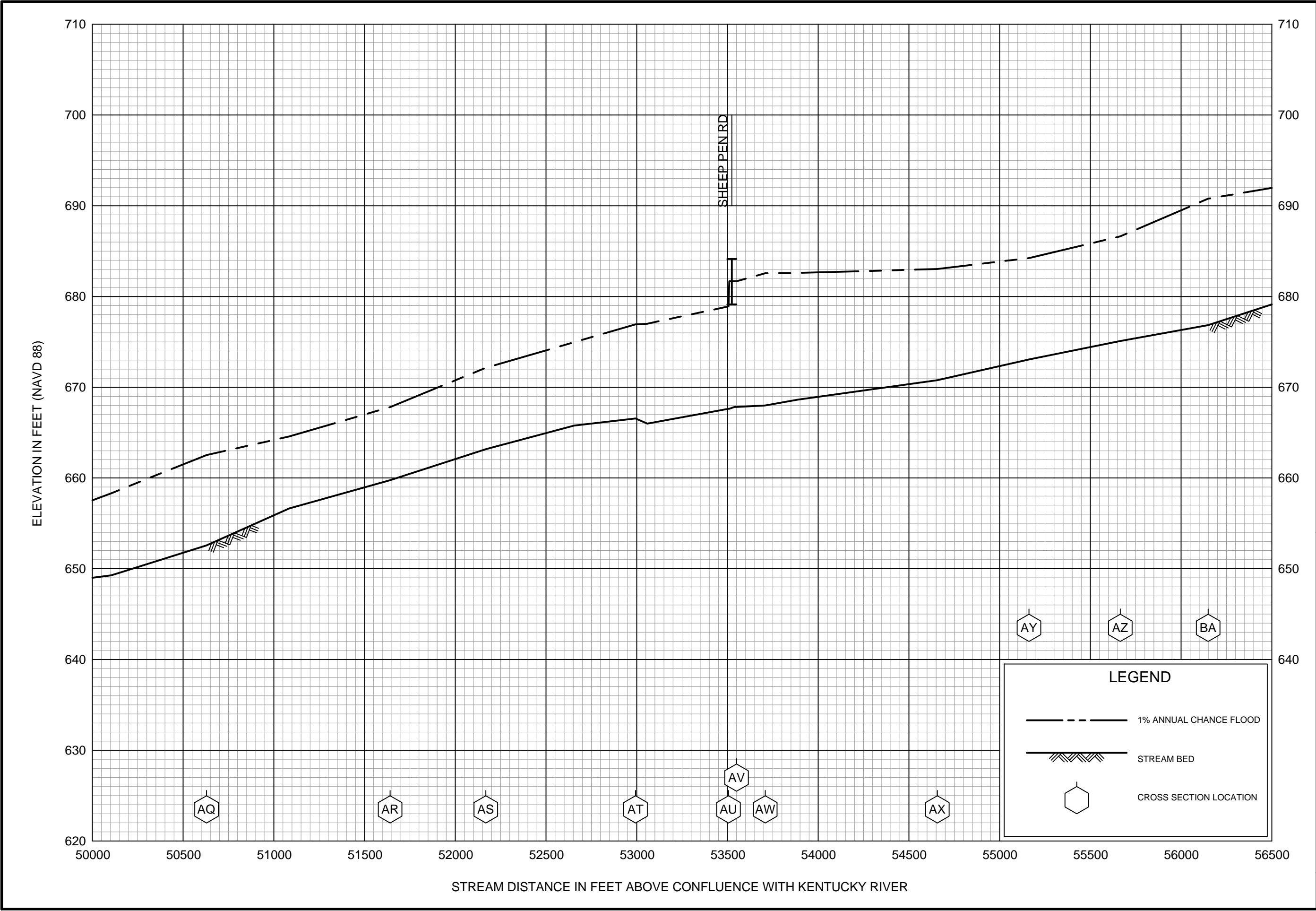
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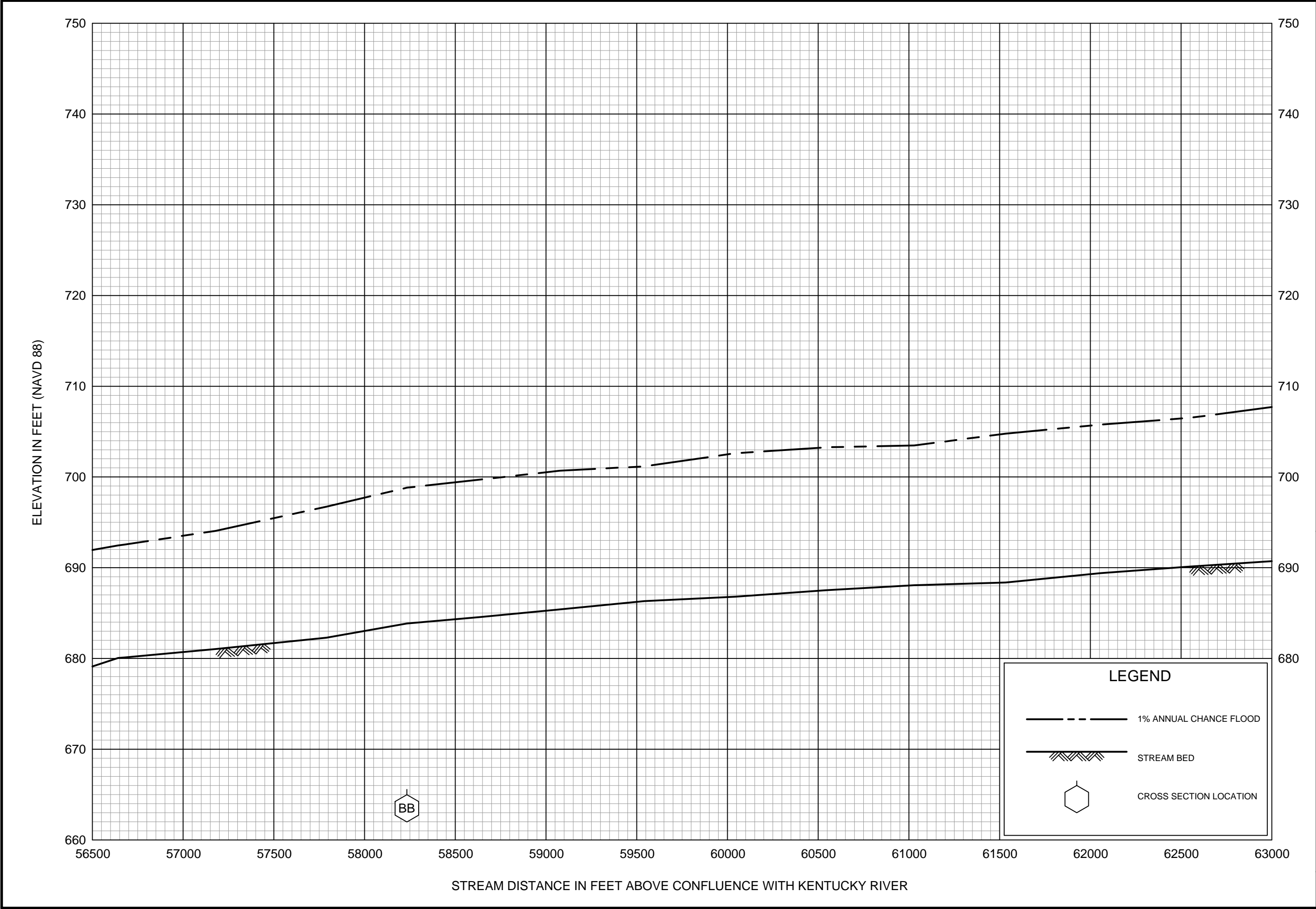
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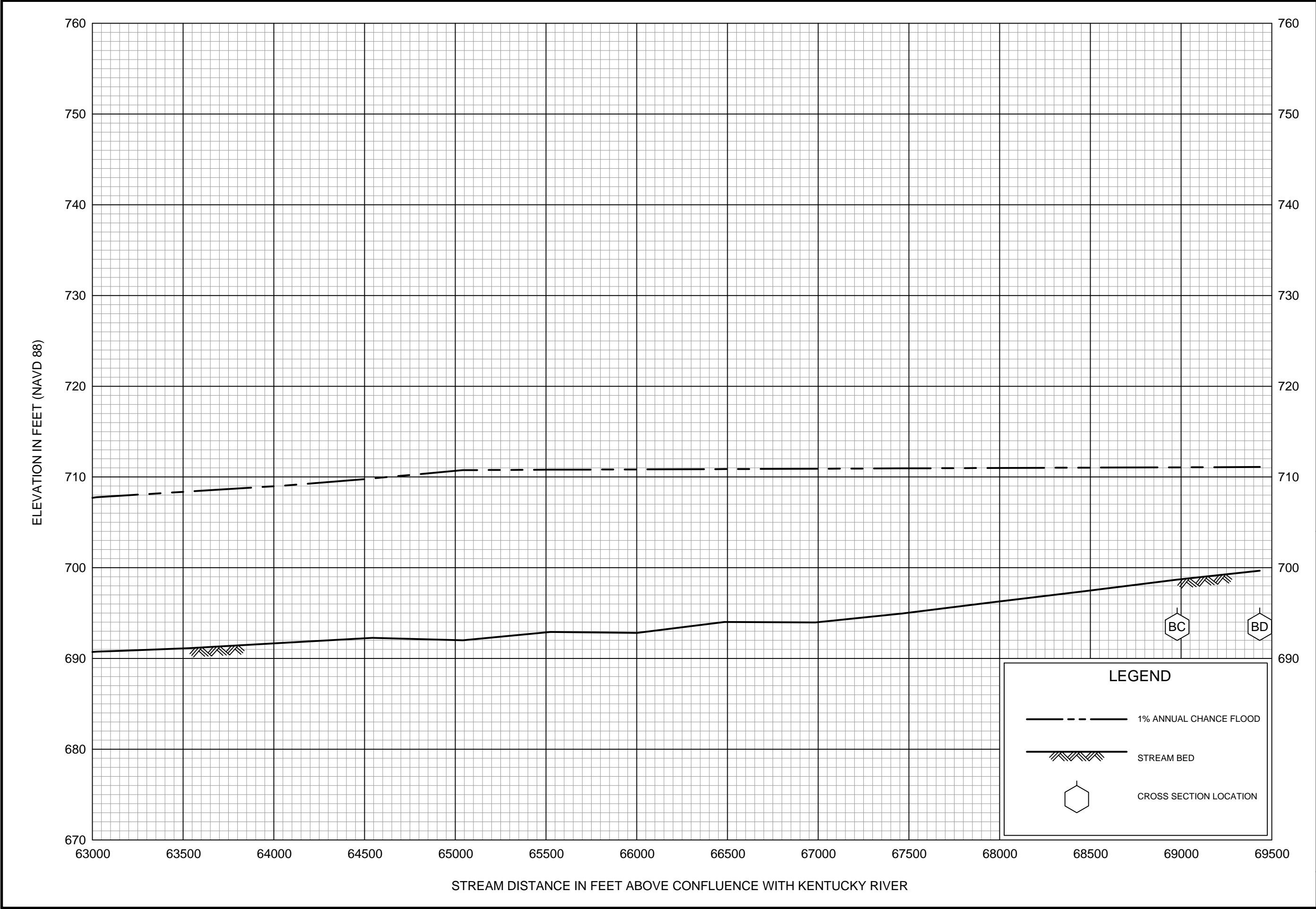


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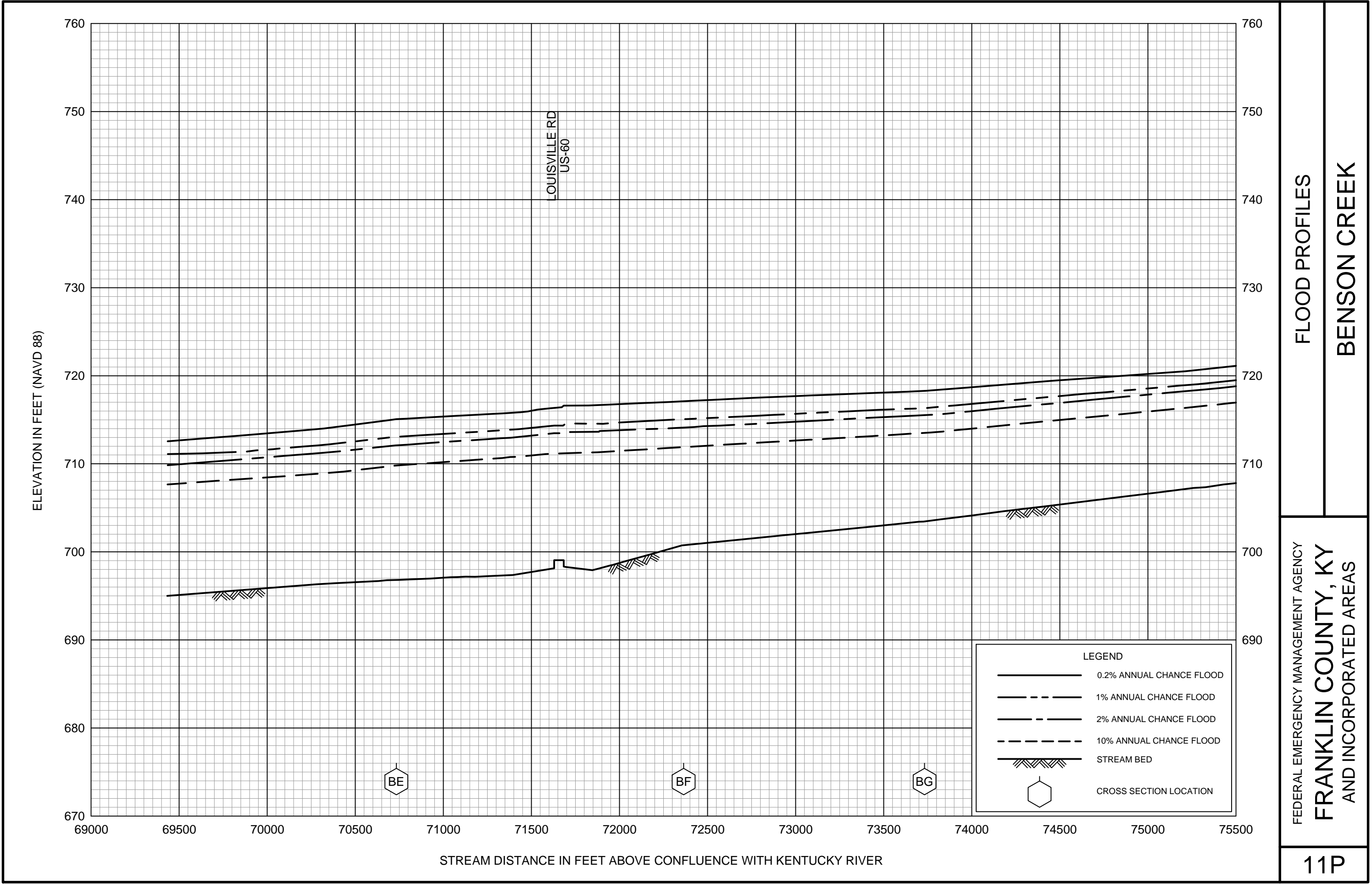
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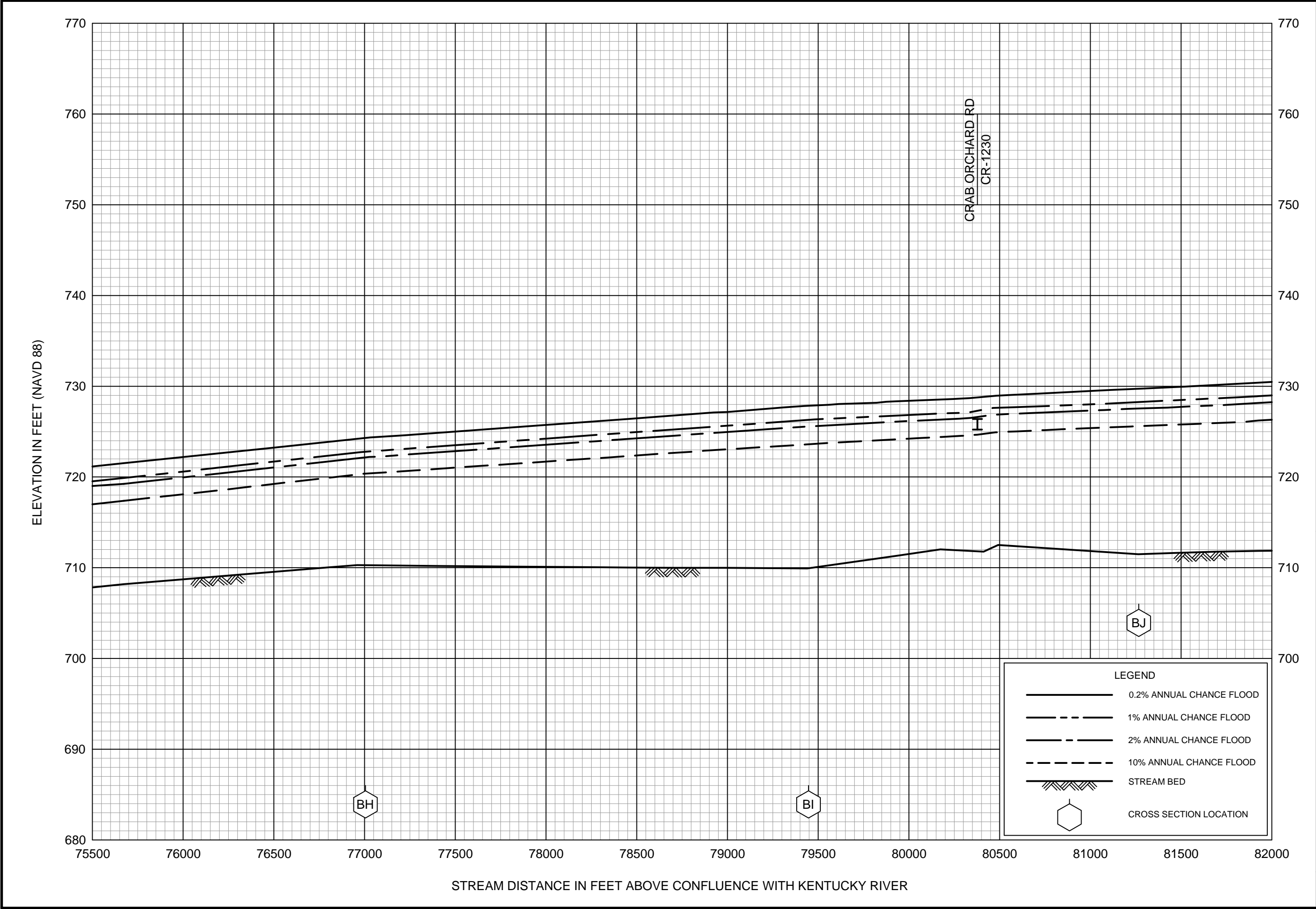


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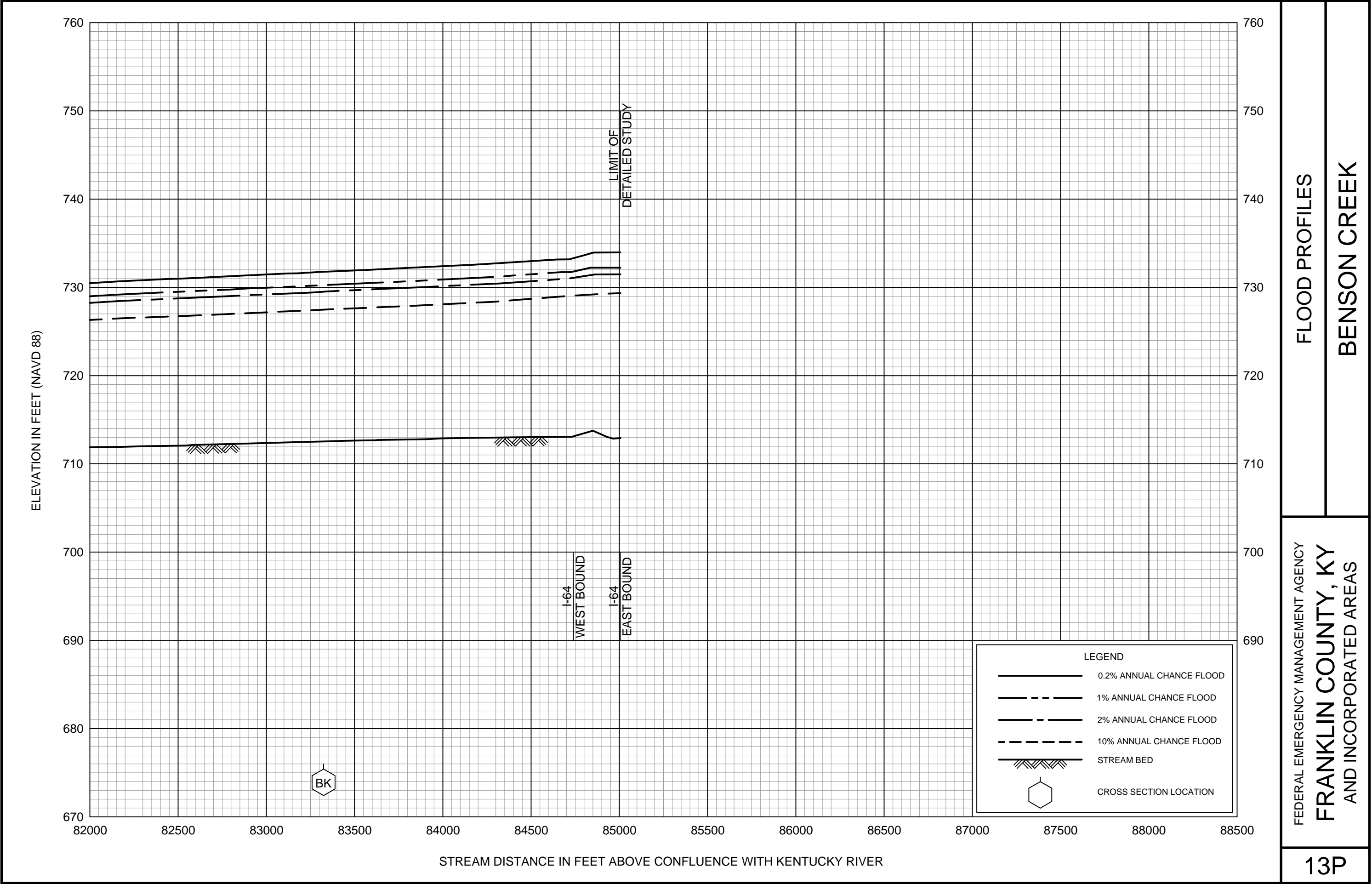
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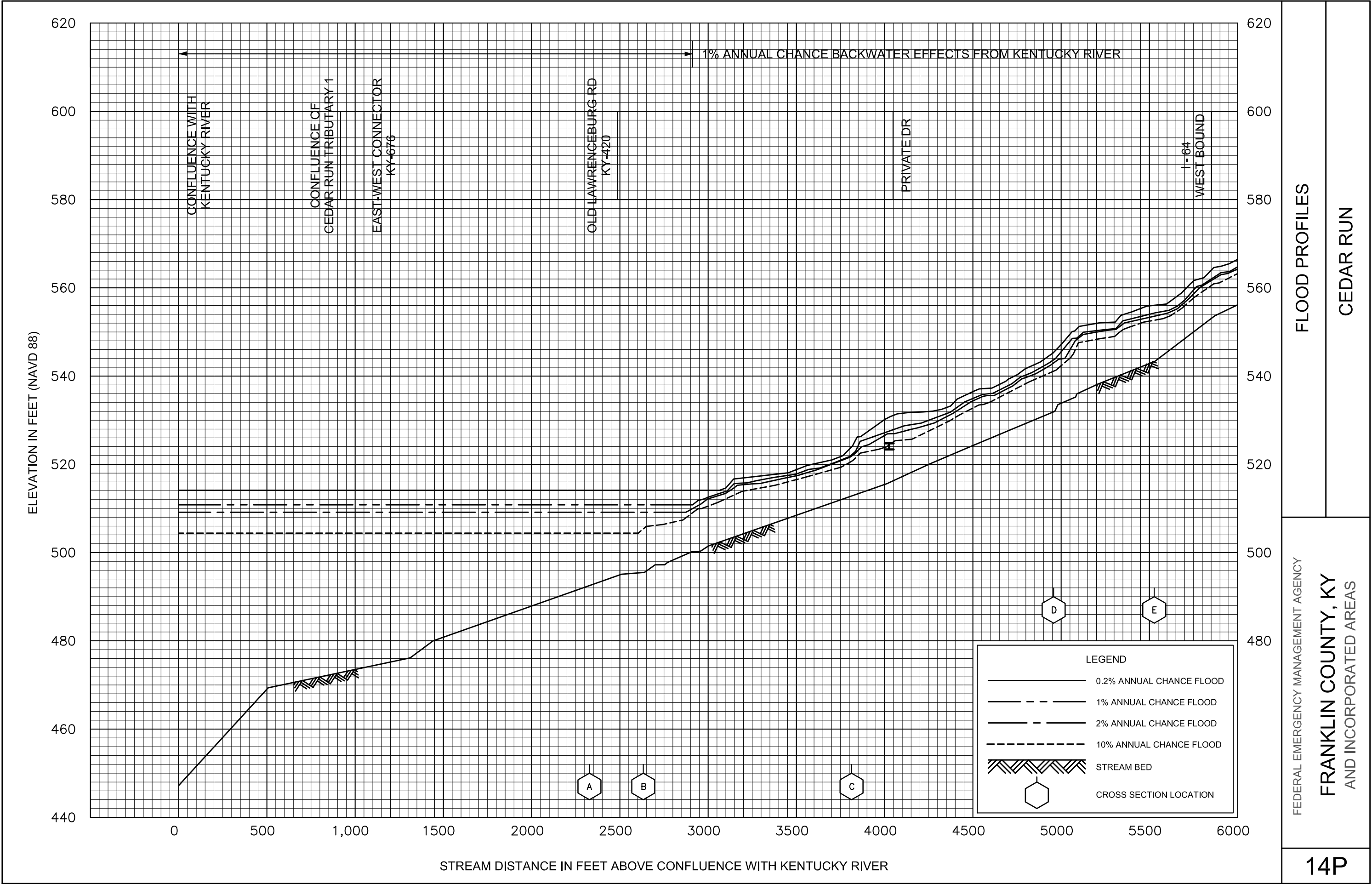


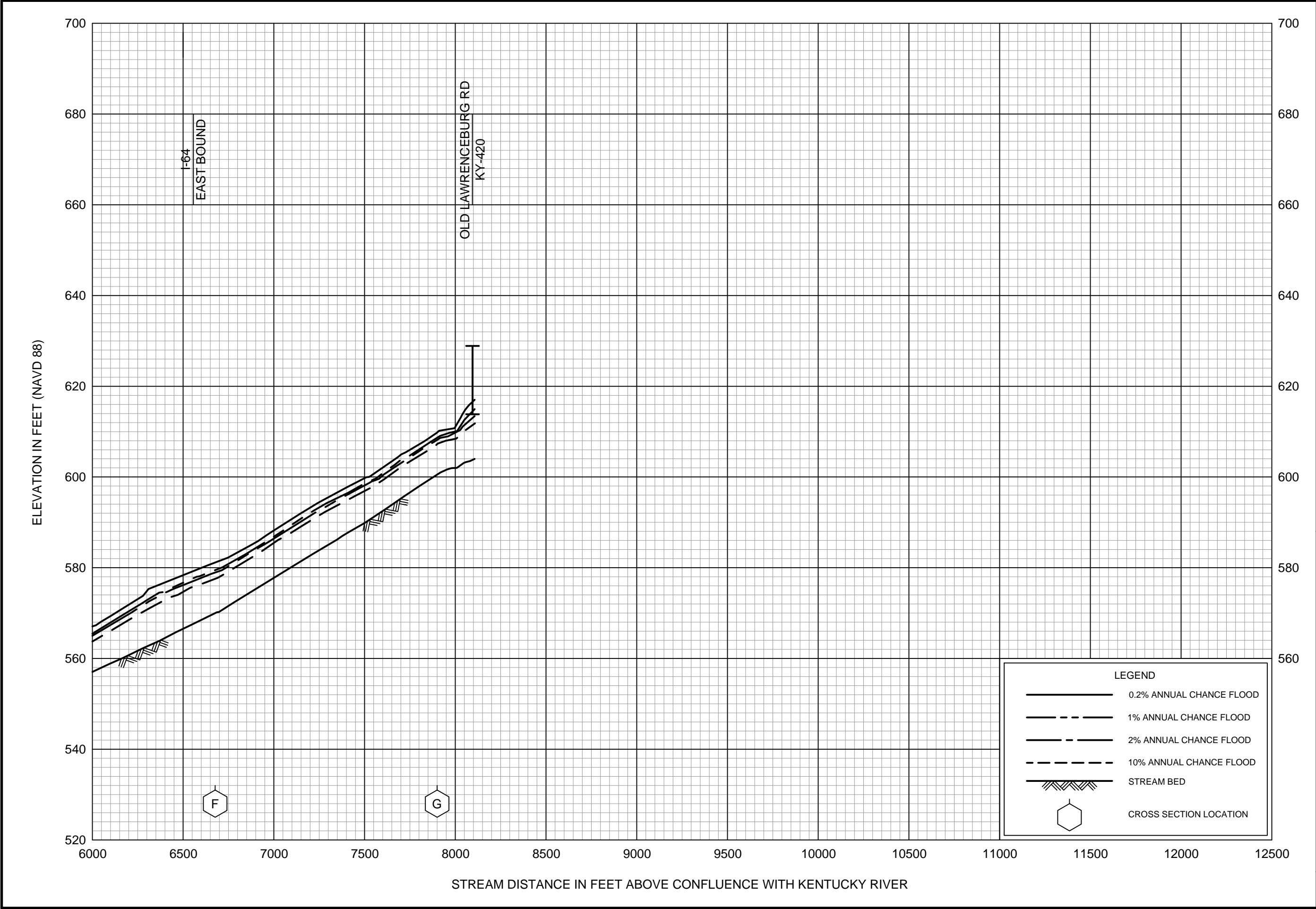
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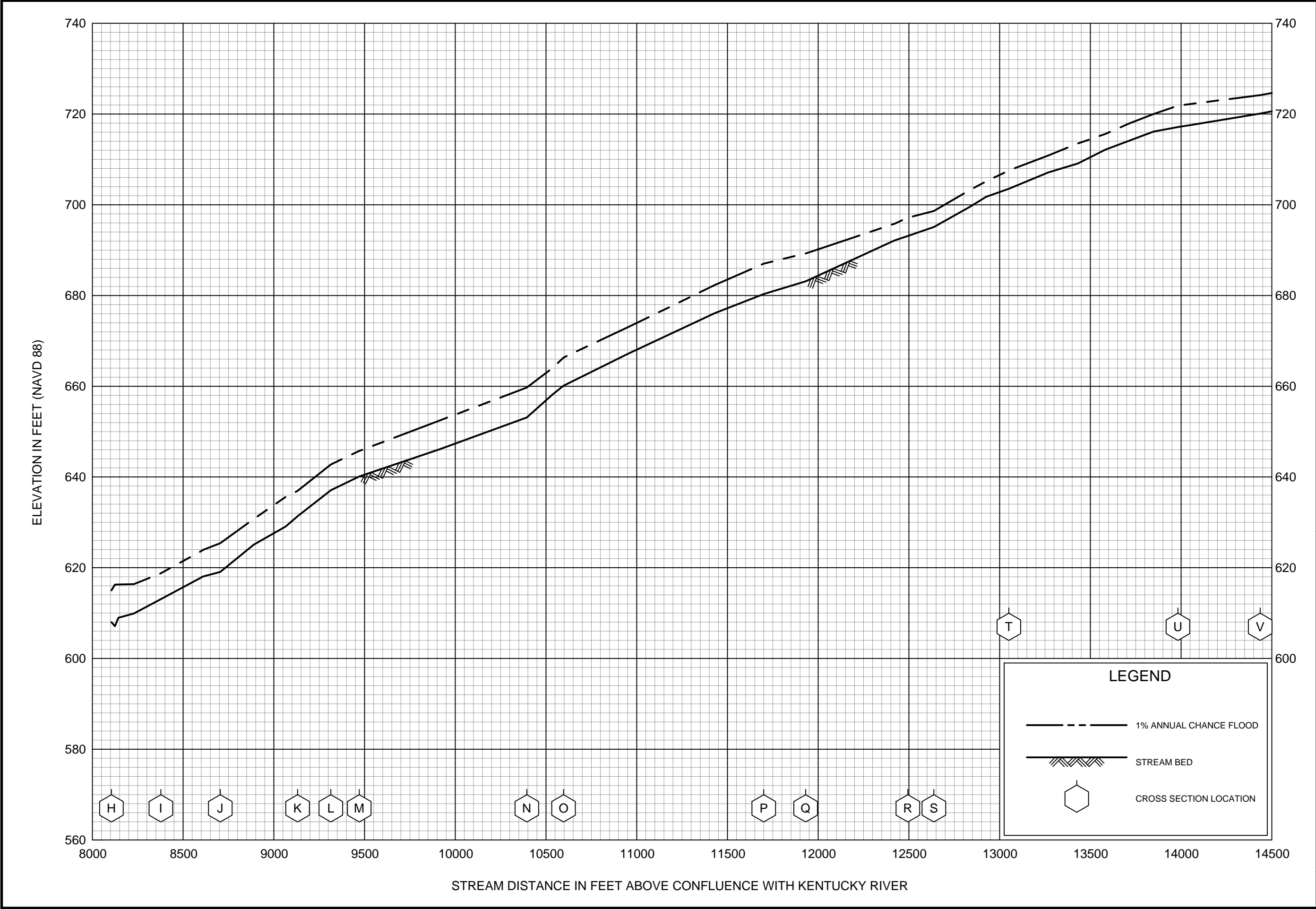


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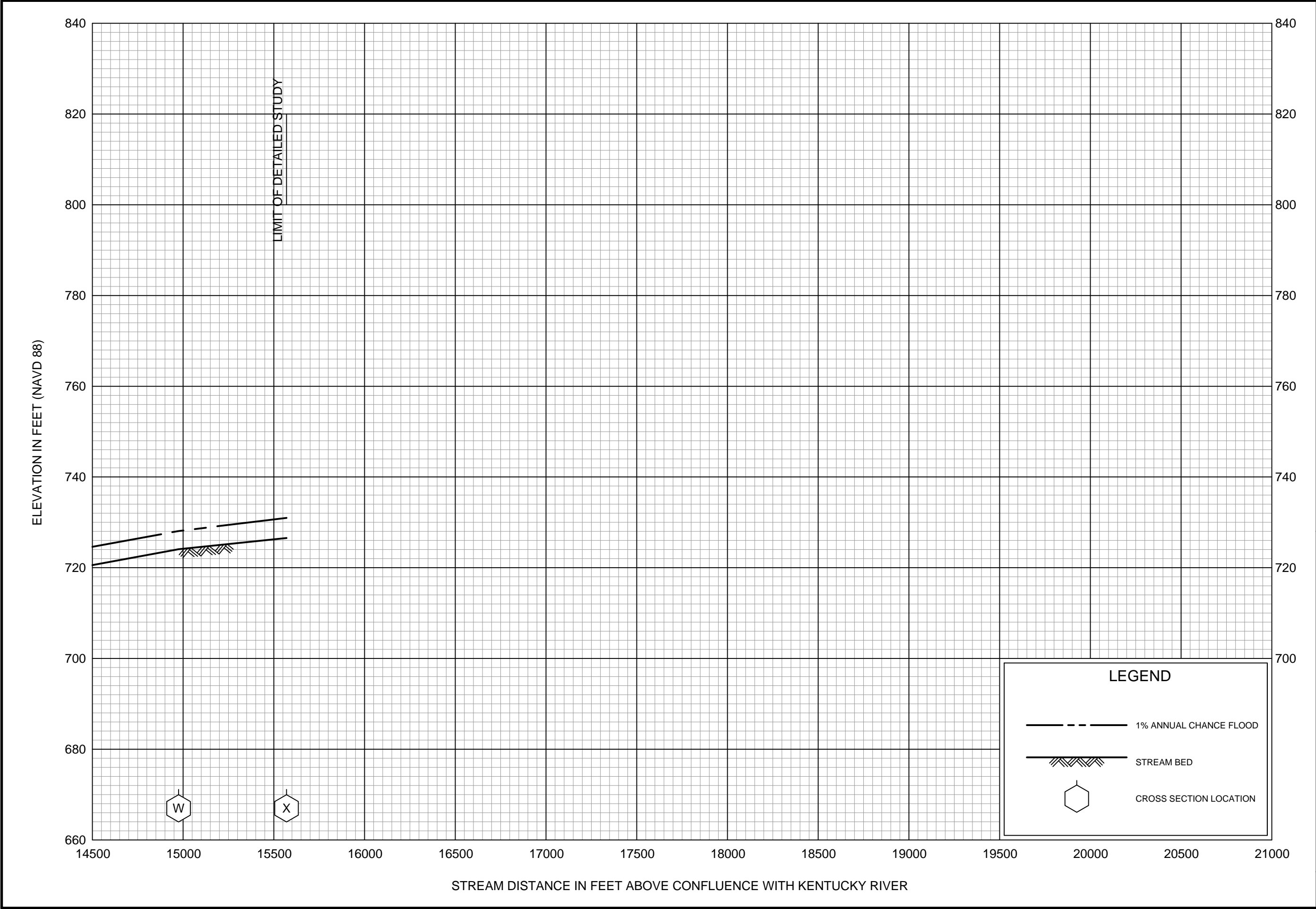


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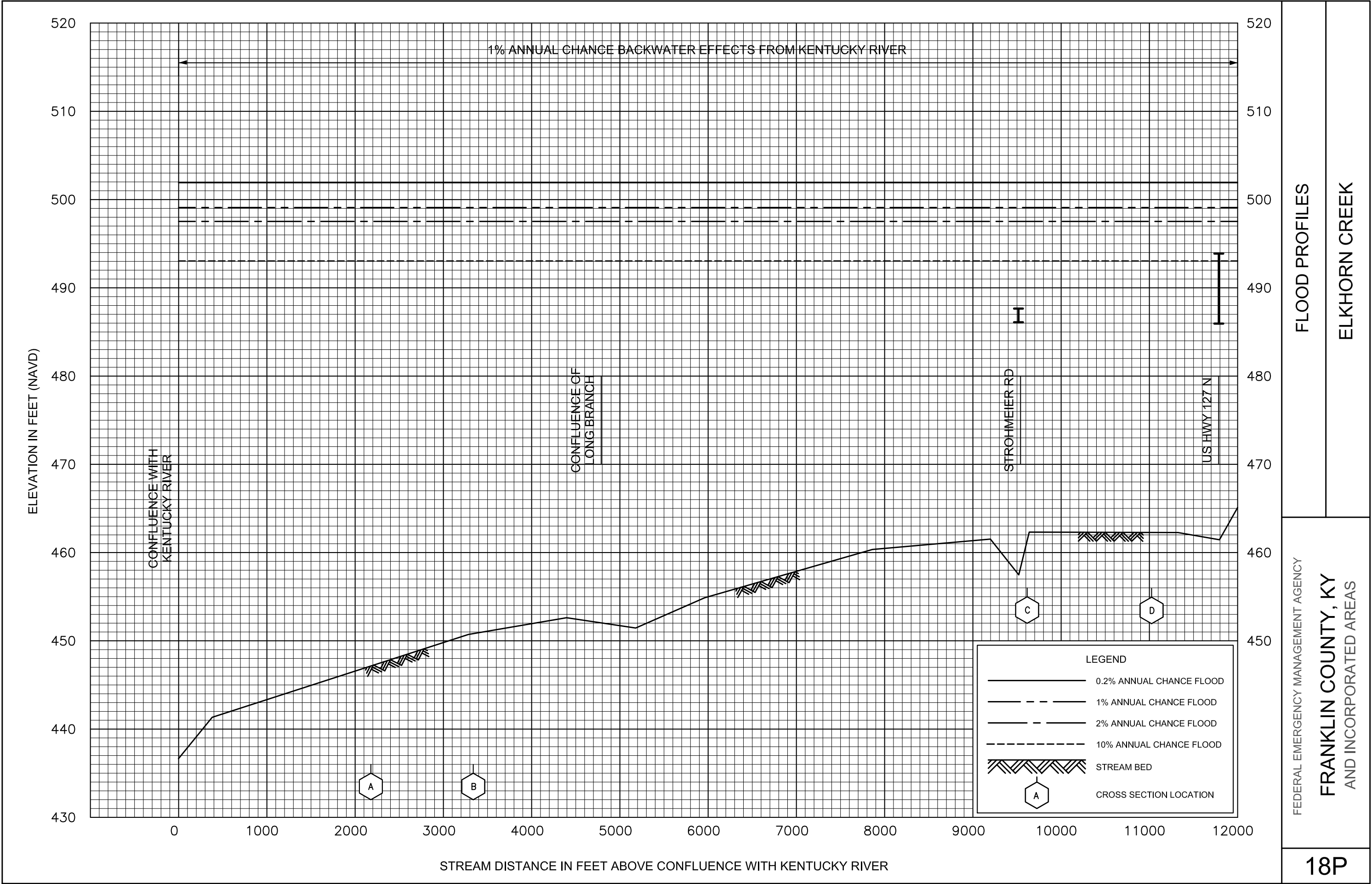


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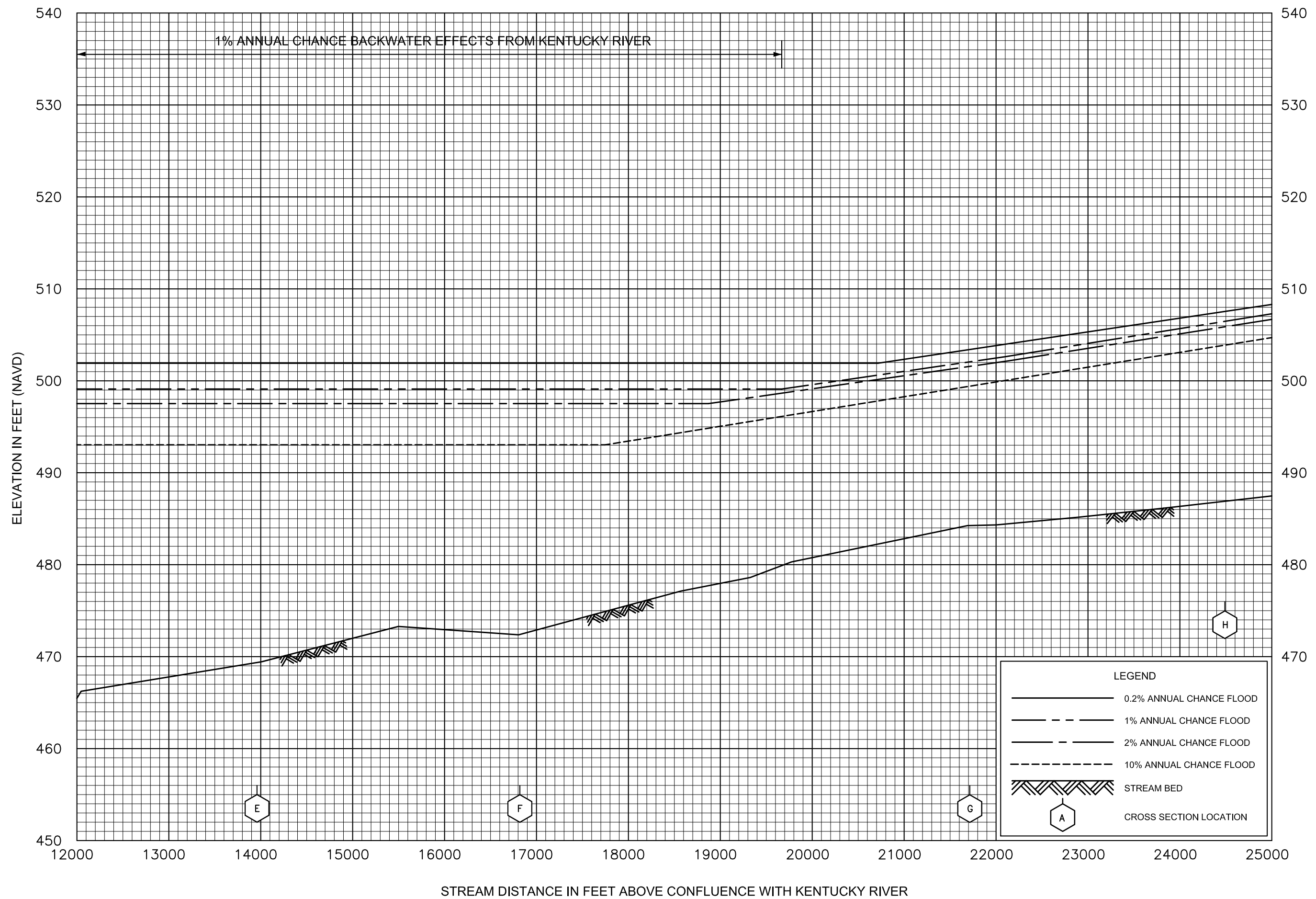


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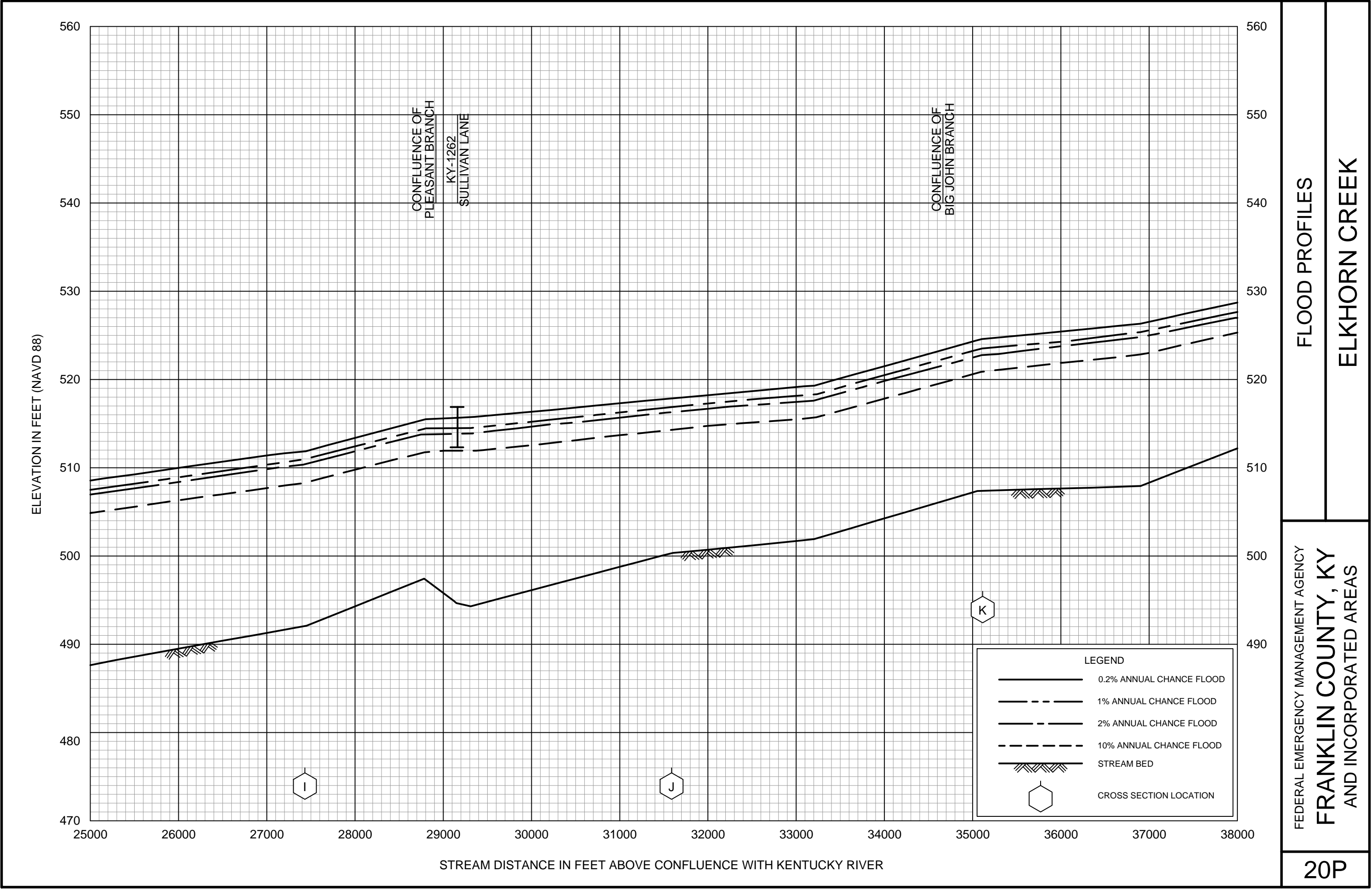
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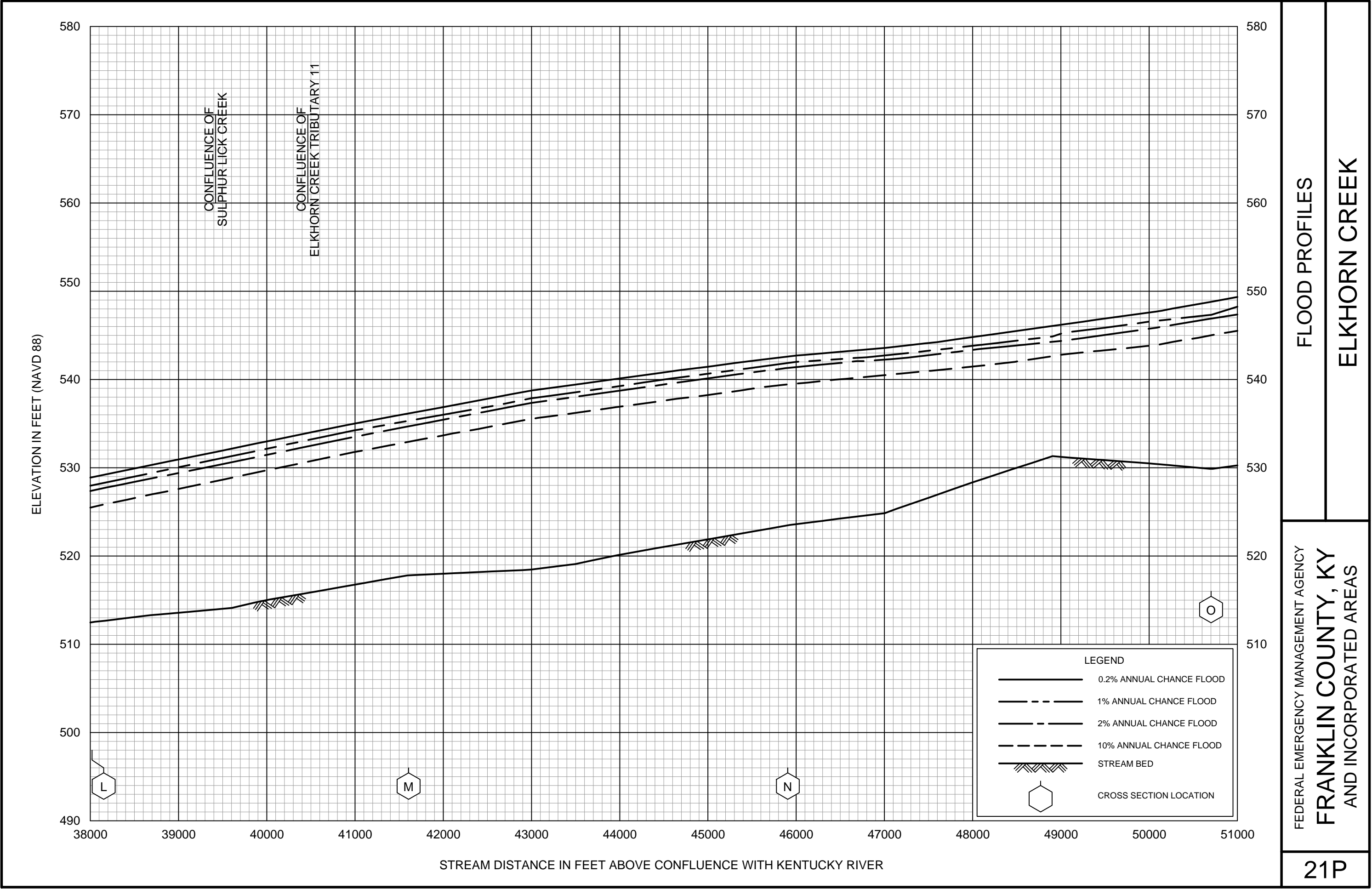
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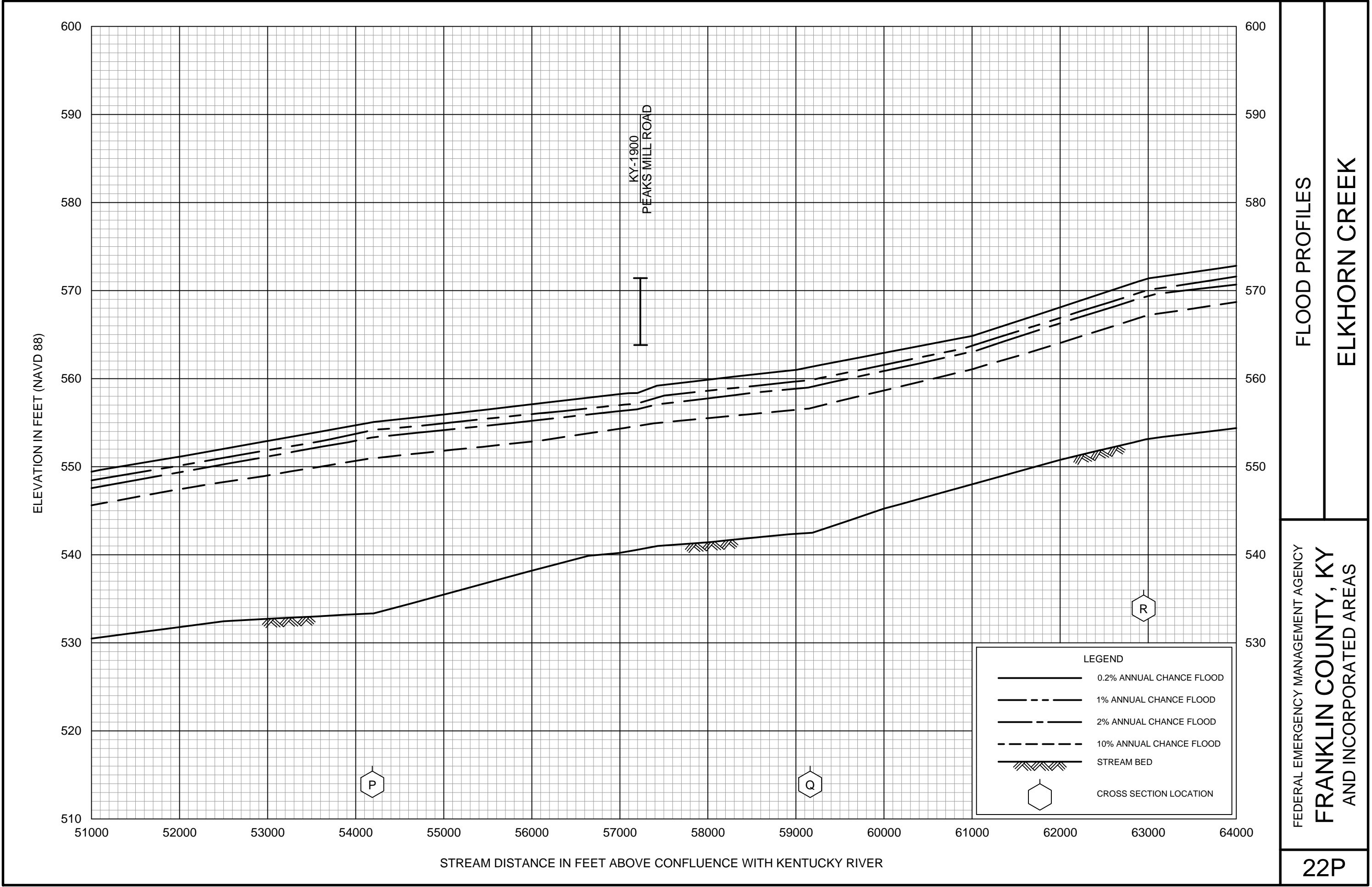
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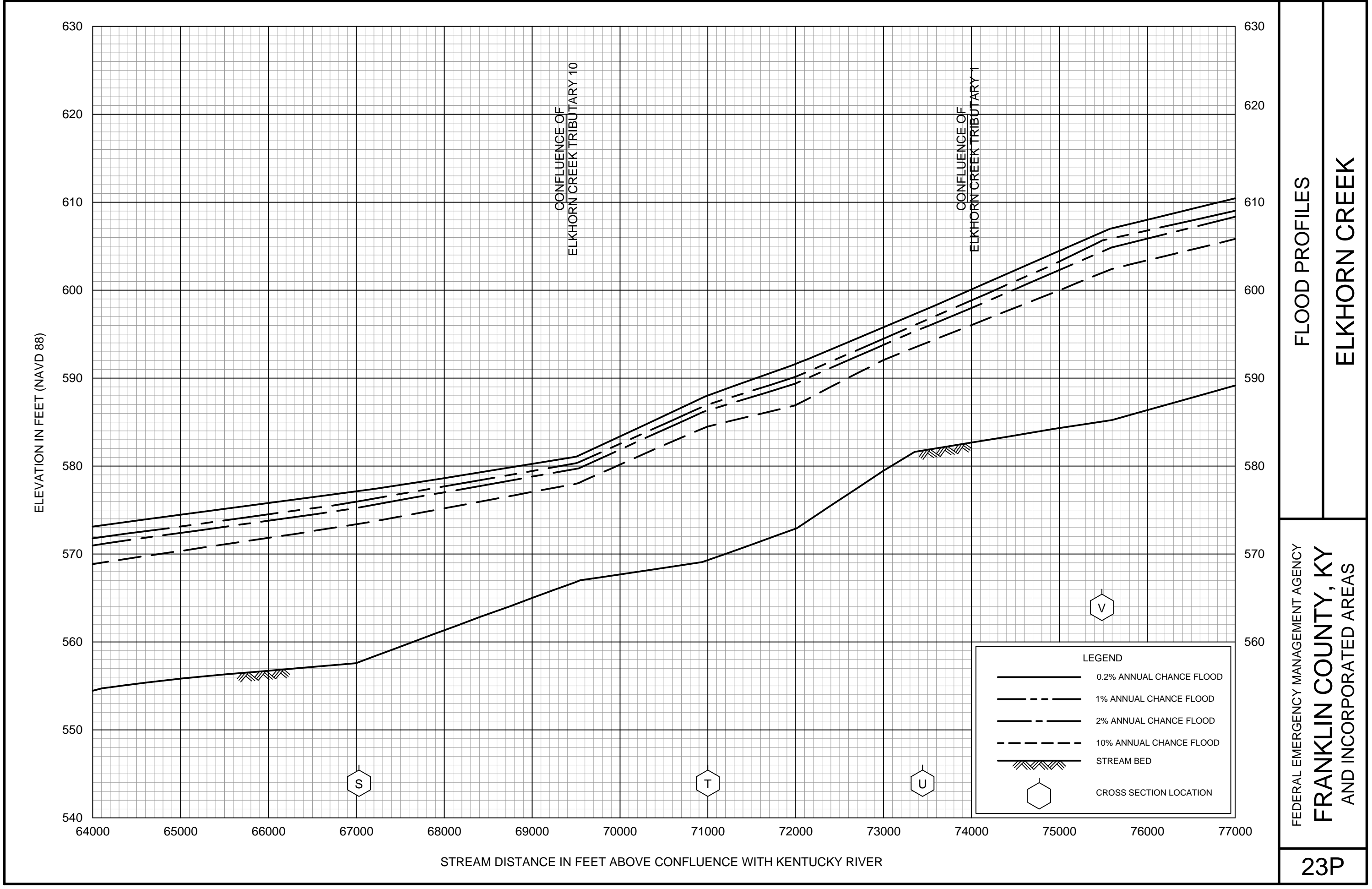






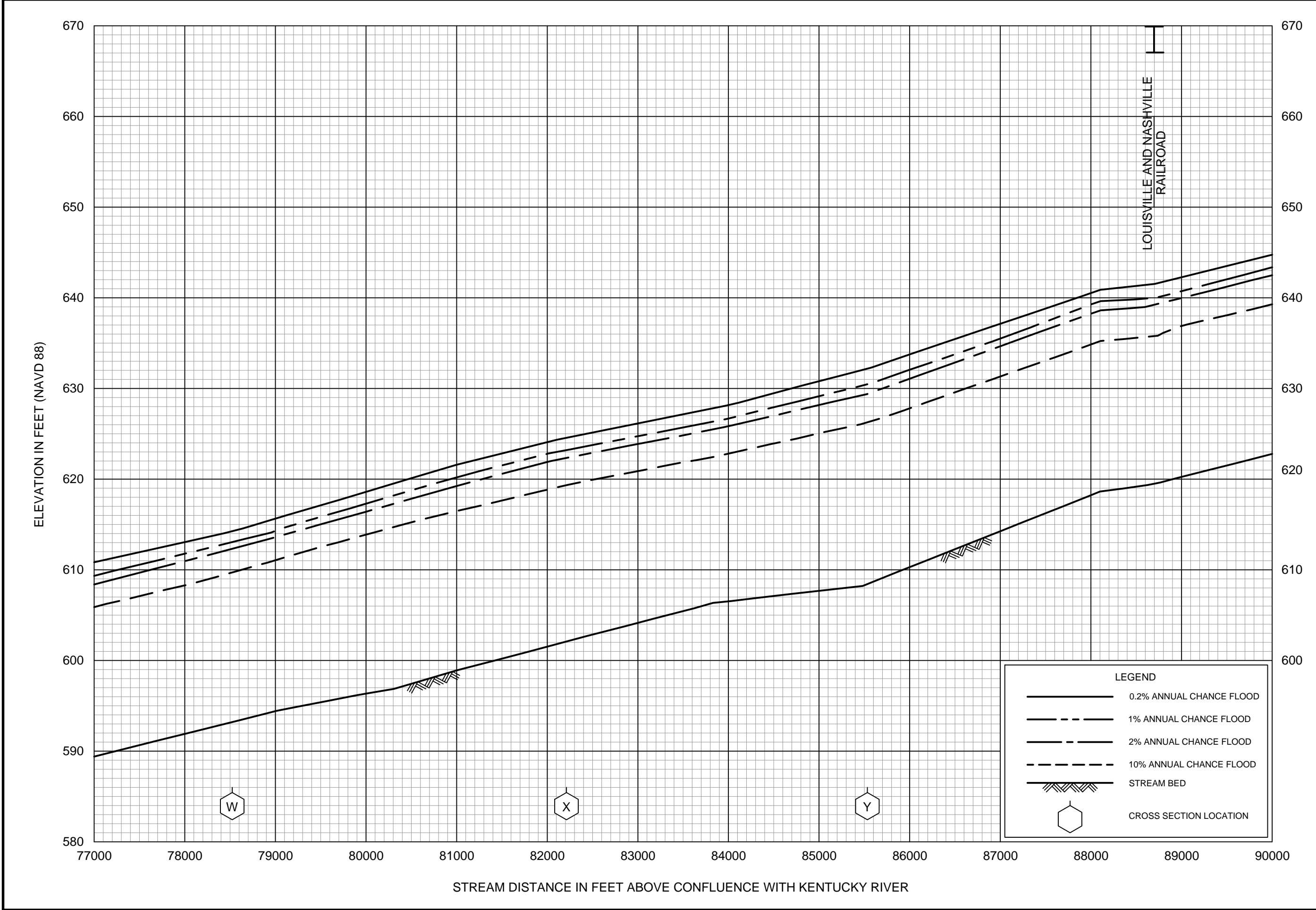
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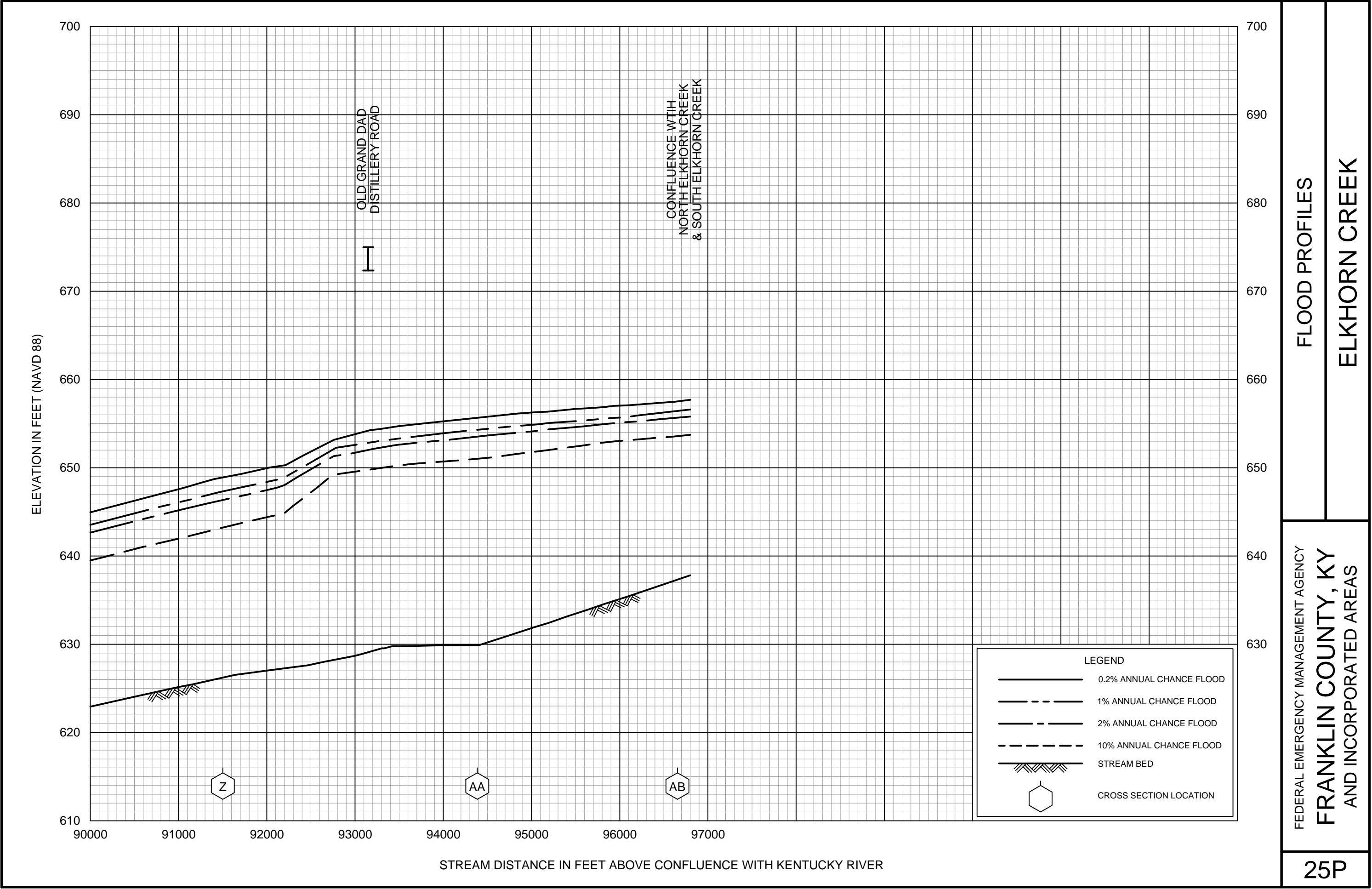


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